

# THE DENTAL DIGEST

GEORGE W. CLAPP, D.D.S., Editor

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Vol. XV

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No. 1

## Contents

|  | PAGE |
|--|------|
| <b>CONTRIBUTED ARTICLES</b>  |      |
| How to Make Gold Fillings, . . . . . J. V. CONZETT, D.D.S.   | 1    |
| Meat Holes and Their Consequences, . . . . . E. S. ULSAVER, D.D.S.   | 5    |
| The Importance and Economy of Correct Bites, . . . . . G. W. CLAPP, D.D.S.   | 8    |
| Anesthetics, with Special Reference to Somnoform, GEO. C. HAFFORD, M.D.  | 15   |
| <b>BUSINESS BUILDING</b>   |      |
| Giving Patients Proper Conceptions of Dentistry as a Means to Better Fees, 21; Give the Tooth Clerk a Chance, 24; Who Shall Pay this Bill? 25; Watchman—What of the Night? . . . . .   | 25   |
| <b>BROTHER BILL'S TRAVELS</b> . . . . .  | 28   |
| <b>PRACTICAL HINTS</b>   |      |
| An Unusual Case of Bridgework, 31; Starting Gold Fillings with Cement, 32; Removal of Amalgam Fillings, 32; Mixing Cement, 32; Painless Excavating, 33; The Rubber-dam, 33; To Correct Unpleasant Odor of Rubber-dam, 33; "Punching" the Rubber-dam, . . . . .   | 33   |
| <b>DIGESTS, DENTAL</b>   |      |
| Taggart Patent: <i>Items of Interest, Dental Brief</i> , 34; Cast Gold Inlays: <i>Pacific Dental Gazette</i> , 44; Contraction of Gold During Casting: <i>Items of Interest</i> , 47; Porcelain and Gold Inlays: <i>Review</i> , 49; Colors and Their Application to Porcelain Inlay Work: <i>Dental Cosmos</i> , 52; A Good Inlay in Fifteen Minutes: <i>Dominion Dental Journal</i> , 54; A Rational Method of Producing Local Anesthesia: <i>Dental Era</i> , 55; Does the Medical Degree add to the Social and Professional Standing of the Dentist? 53; National Dental Association: <i>Dental Cosmos</i> , 59; Are We Ready for New Moulds for Teeth? <i>Items of Interest</i> . . . . . | 63   |
| <b>DIGESTS OF ARTICLES WE OUGHT ALL TO KNOW ABOUT</b>  |      |
| Treason in the Body: <i>Saturday Evening Post</i> , 65; The Solving of the Milk Problem: <i>McClure's Magazine</i> , 72; The Real Self and Drugs: <i>Everybody's Magazine</i> . . . . .  | 81   |
| <b>EDITORIALS</b> —Plans of the New Editor, 90; Historical View of DENTAL DIGEST . . . . .   | 91   |
| <b>BOOK REVIEWS</b> . . . . .  | 93   |
| Obituaries, 94; Marriage Notes, 95; Correspondence, 95; Patents, 96; Notices, 97; Memorandum Concerning Dental Surgeons in U. S. Army . . . . .  | 99   |
| <b>NEWS SUMMARY</b> . . . . .  | 101  |
| INDEX OF ADVERTISERS, next to last advertising page.   |      |

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| INDEX OF ADVERTISERS, next to last advertising page.   |      |



# CONTRIBUTED ARTICLES

## HOW TO MAKE GOLD FILLINGS

J. V. CONZETT, D.D.S., DUBUQUE, IA.

CAVITIES in the approximal surfaces of the incisors, involving the incisal angle, have been the source of countless failures, and many devices have been tried to solve the problems they present.

The common method of the past was to cut out the decayed tissue and the overhanging enamel walls. A deep pit was then made in the incisal angle to furnish incisal retention. The vast majority of fillings anchored in this way failed, because the retention was not sufficient to resist the stress of incision. The filling would spring away from the tooth, leaving a "V"-shaped space between the filling and the tooth at the incisal angle. The filling would either break out entirely or recurrent decay would start in the space. To strengthen the retention, the practice of anchoring screws in the dentine and building the filling around them was tried. Some dentists claimed success in their use, but the majority failed miserably.

Various cavity formations, intended to hold the filling against displacement under stress, were offered, and in this direction progress was made. One method, followed with some success, was to cut a dovetail in the lingual surface of the tooth to prevent lateral displacement of the filling. This procedure had the merit of showing but little gold on the labial surface. The dovetail, however, was necessarily shallow; the retention it afforded was not sufficient to resist severe stress and the leverage on this point from the force of incision was so great that the filling usually failed.

In my practice I use two methods of preparation in cavities of this class. I am a firm believer in "studying conditions" (as Dr. Wedelstaedt is continually preaching), and I do not believe that any one method is applicable to all conditions. Therefore, while I adopt the method of incisal anchorage by using the incisal step, I do not by any means believe that it is the proper method to use in all cases in which the incisal angle is involved. I once heard an operator wondering what he should do about the preparation of a cavity of this class, when a bystander said, "The angle is involved, is it not?" As much as to say, if the angle is involved there is but one method to adopt. This operator accepted that dictum and so prepared the cavity.

If the incisal angle is involved and the occlusion is such that any degree of stress is to come upon it, then by all means take off the angle and use the incisal step for anchorage. But if the lower incisors are unable to reach the angle in any way and there is little or no stress upon it, then it would be wrong to sacrifice the tooth to the extent of cutting for incisal anchorage, unless the tooth was so badly decayed that any other anchorage was out of the question.

When the angle is slightly involved, and the incisal portion of the tooth immediately adjacent is strong and well supported by dentine, I use the preparation indicated in Figure 1. The decay is removed, the



FIG. 1.—View of cavity where incisal angle is but slightly involved.

overhanging walls are chiseled away and the incisal angles cut back to sound dentine. The gingival seat is cut as wide and as deep as possible, to give good foundation for the filling; the labio-gingival and linguo-gingival angles are emphasized a little more than usual and the axial walls are cut at nearly as right angles to the pulpal wall as the tooth will permit. The axial walls will, of course, converge as they progress incisally. At the incisal retention a decided point angle is cut; this must be cut in the dentine and not at the junction of the enamel plates, as that would leave the enamel at the incisal edge entirely unsupported by dentine and consequently very weak. This anchorage must not degenerate into a deep pit, and it must be so made that it is accessible with a plugger point, or the purpose of the anchorage is defeated. This form



of cavity preparation is weak and is to be used only where strength is not a prime requisite; but in a great many cases this form can be safely used with a great saving of tooth substance and the gold may be hidden.

In cases where the angle is broken down either by primary decay or from previous faulty cavity preparation, only properly made incisal anchorage will give permanent and satisfactory results. In forming a cavity, where the incisal anchorage is to be used, the decay is first removed and the walls of the tooth carefully examined, so that we may know definitely just how far we must carry our cavity outline to bring it into strong, safe tooth structure. That determined, we break down all of the overhanging walls until we get into sound territory.

If there is any class of cases that call for heroic cutting it is this. To leave weak walls, or not to cut the step deep enough, is to invite failure. There is no class of cavities more difficult to fill and none that show a larger percentage of failures; but nearly all such failures result from not cutting wide and deep enough, because of the desire to hide the gold. In these cases you cannot hide the gold if you are going to save the teeth, if there is any degree of stress upon them. The greater the stress to which the completed filling will be exposed the deeper must be the incisal step; you must have deeper anchorage to resist this stress, and you must have the cavity deep enough to allow for a sufficient mass of gold in the completed filling to resist this stress without "flowing." Gold will flow under stress, especially pure gold. If the incisal portion of a filling of this character is shallow it allows for but a small mass of gold. Under the force brought to bear upon it this will flow away from the walls and margins, leaving them unprotected. The fluids of the mouth and organisms of decay can now enter.

The incisal step should be made with a flat carborundum stone in the engine. It should be cut deeper on the lingual than upon the labial surface for two reasons: first, because the mass of gold upon the lingual surface is hidden and, therefore, does not enter into the esthetic consideration, and, second, because the stress comes upon this lingual surface and there is need of a greater mass of gold at this point to resist the stress. The gingival seat should be cut as broad and deep as in the cavity previously under consideration, and the axial walls should be prepared in the same way. The labio-gingival and linguo-gingival angles must be considerably accentuated, because we must depend upon the anchorage at these points to prevent incisal displacement. Figure 2 shows us the labial aspect of a cavity prepared in this manner. The incisal step must begin at a point where the enamel rods are the strongest, and must never be just at the point of either developmental groove. If it is necessary to begin this step near one of the grooves, considerations of safety will lead us to carry our starting point to the other side.

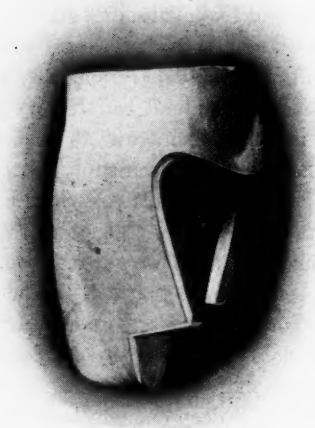


FIG. 2.—Labial view of incisal step cavity.

The enamel rods about the grooves are so eccentric that it is not safe to make a margin in this area, for fear of leaving unprotected short enamel rods that will ultimately break out and leave a vulnerable point.

The dentine is grooved in the incisal step as indicated by Figure 3,



FIG. 3.—Incisal view of incisal step cavity.

which shows a view of the incised surface of the same cavity; at the extreme point of the step a pit is made in the dentine of the step as indicated. This pit, with the decidedly distal sloping of the step on the lingual surface, shown in Figure 4, is to prevent the displacing of the filling by lateral stress. This is the strong point in this preparation. A filling properly made by this method will not be displaced under any stress that may be properly brought to bear upon it.

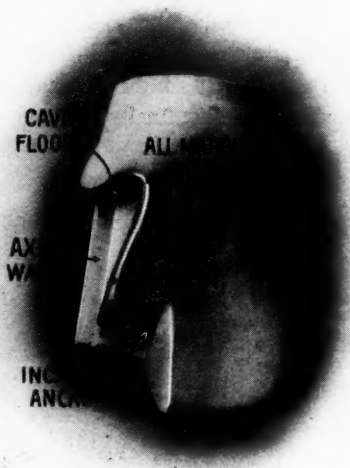


FIG. 4.—Lingual view of incisal step cavity.

Figure 3 shows the incisal surface of the tooth and the internal preparation thereof. You will notice that the flat gingival seat, the accentuated labio-gingival and linguo-gingival angles, with the converging axial walls, afford strong retention against incisal displacement. This view also shows the groove in the incisal step and the difference in the depths of the labial and lingual surfaces of these steps. It also shows the preparation of the cavo-surface angle. This angle is beveled for the protection of the enamel rods as in all other classes of cavities.

## MEAT HOLES AND THEIR CONSEQUENCES

E. S. ULSAVER, D.D.S., NEW ROCHELLE, N. Y.

A "MEAT HOLE" between teeth may be defined as a place into which food wedges.

The "meat holes" to which I wish to call attention arise from

one cause—approximal decay and imperfect restoration, more especially in the posterior teeth. My attention was first called to "meat holes" by unpleasant personal experience.

During youth a cavity developed on the distal side of an upper bicuspid. It was filled with amalgam by a dentist who knew nothing about the importance of proper contour for approximal fillings. He dressed the filling off nearly flat. For many years shreds of meat and other fibrous foods wedged there. The efforts necessary for removing the food often wounded the gum and a chronic gingivitis resulted. The inter-dental papilla was absorbed and a pocket formed. From exposure of the cementum the tooth became sensitive to heat and cold; food lodged more and more easily. Because of the discomfort which resulted, I hated to chew fibrous foods, and finally slighted proper mastication.



The meat hole described in this article was located between the bicuspid. It has now been completely cured by a properly contoured filling. A bad meat hole exists between the second bicuspid and the molar, due to a flat filling. It awaits a properly contoured filling.

Decomposition of food remnants in the pocket produced a bad odor and caused a bad taste in my mouth.

Finally a dentist who knew what was required filled the cavity with a properly contoured filling. The "meat hole" was cured. The relief was so complete and welcome that I have since given this subject special attention, greatly to the benefit of certain patients. A short explanation will outline the evils attending and following "meat holes," and enable any dentist to render his patients welcome relief.

When the posterior teeth are in normal positions their relations are as shown in the illustration.

The approximal surfaces are in contact in the occlusal thirds. They are widely separated cervically. Any particles of food forced between the contact points must be ground fine either before going through or

during the passage. After passing the contact points, food comes to the constantly widening space between the necks; from this space it is turned by the presence and form of the interdental papilla. Should it tend to linger, the oral fluids speedily wash it away.

Whenever a bicuspid or molar loses a mesial wall in a person of less than middle age it is very likely to begin to move forward. If a tooth loses a posterior wall the tooth posterior to the decay may move forward. In extreme cases I have known a molar to crowd into a cavity in the posterior side of a bicuspid.

When the contact point is lost the form of the interdental space is inverted. It was formerly wedge-shaped, with the point of the wedge directed occlusally; it is now either straight-sided or the point of the wedge is directed cervically. The two wedge-shaped forms are shown in the illustration.

Into spaces of either the flat-sided form or the inverted wedge form, fibrous foods wedge. This results in much annoyance to the patient. The interdental papilla is crowded and slowly absorbs.

After a time a pocket forms between the teeth. The starchy foods enter the pocket. Here they are sheltered; here they are broken down by microorganisms, and here the acids to which they give rise attack the teeth.

This point of attack is particularly well chosen. The withdrawal of the gum tissue has exposed an area of enamel which is hardly accessible for proper cleansing. *It was an important part of the papilla's mission to protect this highly susceptible tooth area.* But now the papilla is gone. The enamel, and perhaps the cementum, are exposed to attack by an ever-present enemy well entrenched. The cervical margin of any filling located in this exposed area offers a very susceptible point of attack. Recurrent caries usually results. There is little doubt that caries at cervical margins of approximal fillings is often due primarily to the lack of sufficient contour to protect the interdental papilla. The cementum often becomes extremely sensitive.

When the gum has withstood a certain amount of pressure, gingivitis, or even a pericementitis, may develop about the affected tooth. The patient may experience a real pain or a persistent sense of discomfort; in some cases an extensive absorption of the process follows. I have treated several such cases. This often leads the patient to avoid chewing on the affected side of the mouth. If the occlusion on the opposite side is such that food cannot be properly masticated, the patient bolts it half chewed.

The evils resulting from "meat holes" may be summarized as follows: Wedging of food, with attendant discomfort, gingivitis; absorption of gum tissue; exposure of susceptible tooth tissue; hypersensitive

cementum; frequent decay; absorption of process; imperfect mastication.

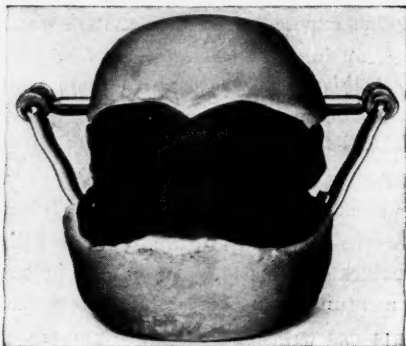
All these evils can be remedied easily and effectually if we exert proper patience. It may be done quite painlessly. It needs only that the decayed tooth be moved slowly back a *little posterior to its original position* by the use of either gutta percha or cotton tape. The tooth should be held back till the soreness passes away. When the cavity is properly prepared the matrix is adjusted to replace the missing surface and the filling is given ample contour. The tooth will then return to position and to effective contact. The papilla will be preserved, food will not lodge, the patient will experience immediate relief and the filling endure. But the separation and contour are essential.

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(The Subject of Bite Making and Tooth Selection will be Covered  
in Four Letters)

### THE IMPORTANCE AND ECONOMY OF CORRECT BITES

G. W. CLAPP, D.D.S.



ILL. No. 1.—Properly made, built-up bites.

#### PROPERLY MADE, BUILT-UP BITES

THE importance, and indeed the necessity, of built-up bites to good plate work cannot be over-estimated. A few of the points where this importance is manifested are as follows:

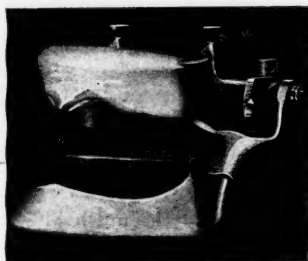
Built-up bites offer the only *certain* means of getting correct relations of the jaws, that is, "getting a correct bite."

The correct relations of the jaws, vertically, can be gotten only by

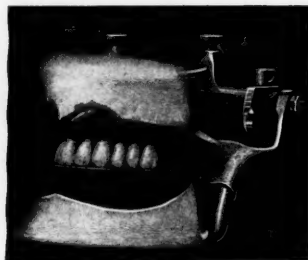
means of bites with which the separation of the jaws can be so controlled that the lips lie properly. Built-up bites are the only ones of which this is true.

Built-up bites permit an accuracy in the selection of teeth which is otherwise impossible. While teeth may be fairly well selected by guessing or by trying them on the model, exactness is almost impossible by either method. The only way to select teeth quickly and accurately is by means of dimensions registered on built-up bites. This will be explained later.

Built-up bites save more time in setting up teeth than is required to make the bites. It is much easier and quicker to set uppers properly by means of a lower bite that regulates the position of every upper tooth than to remove "mush bites," make wax base plates and then set the teeth purely by judgment, or by a measure which locates merely the cutting edges of the centrals. By cutting in the upper bite places to set the teeth (Illus. 1 and 2\*), the locations of the cutting edges and



ILL. No. 2.—Built-up bites with section removed for placing the upper teeth. Some workers cut away for only one tooth at a time.



ILL. No. 3.—Built-up bites cut away and teeth in place. Manner of setting described in *Cosmos*.

the occlusal surfaces are quickly obtained, and the positions and slopes of the labial and buccal surfaces are correctly established.

In waxing up much time is saved and a good deal of uncertainty avoided. It is not easy to tell just how full to make the gums when "a mush bite" is used, but a built-up bite has already done that. It was correctly built out in the mouth; therefore, it is necessary only to set the teeth into the bite and wax about them.

Changes of teeth in the mouth are fewer and simpler following the use of built-up bites. Most careful plate workers prefer to try the waxed plate in the mouth to verify the articulation. Following the use of other forms of bites the changes are often extensive. The upper teeth may come too low in relation to the lip; or they may not come low enough. They may project too far or not far enough. Any changes in

\* Illustration from *Cosmos*, 1908.



the anteriors are likely to involve changes in the posteriors, possibly to the extent of resetting.

Built-up bites, when well made, determine in advance the length and projection of the anteriors and the position of the posteriors. Changes in the mouth are not often necessary, or if required are but slight. Teeth adapted by such bites require but little grinding to give both sets proper articulation.

Apparently the careful making of built-up bites is a waste of time; but for the dentist who wishes to make plates which appear well and masticate successfully built-up bites, slow as they seem at first, are really speed-makers. The old adage, "Make haste slowly," applies here with peculiar force. A little slow haste in the beginning of plate making will quicken our steps surprisingly before the plates are finished.

The reason built-up bites *seem* to take more time is that they accomplish in the bite, and at once, several things which other forms of bite scatter through the history of the plate. We must make the wax base plate. We must determine how low the cutting edges of the upper centrals shall come. We must decide what forward slope to give the anteriors and what buccal slope to give the posteriors. If we care about expression we must give the gums the fulness required for that case. With the "mush bite" we put off settling these questions till we are in the laboratory with no exact data at hand, and we can give guesswork a free rein. Guesswork takes more time in the end than the built-up bites require. Careful examination shows that the mush bite costs more time than it saves.

Later on these articles will deal with the subject of Anatomical Articulation. Built-up bites are absolutely essential to this most desirable form of plate work.

#### HOW TO MAKE CORRECT BITES

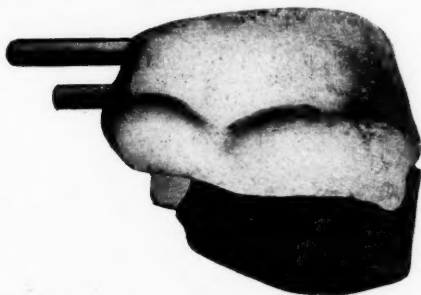
The making of the first few bites will probably require a little patience, but the technic is really simple, and once it is acquired bites may be made in a few minutes.

Bites are made by the use of base-plate wax or base-plate composition, as the dentist may choose. A plate of the desired material is made over each model precisely as when starting to set up the teeth.

A bite may be made of modeling compound by placing the soft compound over the ridge in the form of a roll reaching from one tuberosity to the other. Work the lingual side of the roll down over the palate from each ridge till it meets the center, forming a plate. Work labial and buccal sides of the roll up the outside of the ridge. Of course the bulk of the compound should be left on the ridge to form the bite.

Everything considered, base-plate composition is by far the best

material for making bites. It must be softened with dry heat and adapted before it cools. With a hot instrument the edges can be quite easily trimmed to proper height all around the margin and to proper length at the back. A roll of wax, trimmed to present a flat occlusal surface, is now placed along the ridge and fastened to the plate with heat. The roll should be somewhat deeper vertically than the length of the teeth to allow for trimming.



ILL. 4.—Upper bite cut in halves at median line to show formation of ridge of built-up bites when properly trimmed.

The labio-buccal surface of the upper bite is made approximately smooth. It is then ready to try in the mouth where the balance of the work is done.

The upper bite is put in first; the lower is left out until the upper has been properly trimmed. With the upper bite in the mouth we determine first whether the labial surface has the proper prominence to restore correct expression of the lip. If the wax is not full enough, build it out until the lip appears about right. If it is too prominent, trim until the lip appears natural. This trimming need not be done with great care at present, but may be left until last. Build or trim the buccal surfaces of the wax ridge until the cheeks have approximately the proper fullness.

#### MARKING THE UPPER BITE

Mark the median line, and if there is difficulty in determining this, lay a straight edge from the center of the chin either to the center of the nose or the center of the forehead. Mark the median line where the straight edge crosses the bite.

As the lips lie touching in repose, place an instrument between them and make a horizontal mark on the bite across the median line. This is known as the Rest-line (Ill. 5). Take the bite from the mouth, measure one and one-half millimeters, equivalent to one-sixteenth of an inch, below the Rest-line and trim the upper bite occlusally to this point.



ILL. 5.—Rest-line.

The degree of curve in the buccal section is difficult to determine save by means which cannot be treated of in this article. For most cases the line of curvature should be nearly flat through the width of the bicuspid and should then curve slightly upward through the molar region.\*

#### TRIMMING THE LOWER BITE

When the upper bite has been trimmed as above, place the lower bite in the mouth and shorten it by trimming the occlusal surface until the lips touch lightly in repose and it lies in contact with the occlusal surface of the upper bite throughout. That means that the patient need not exert muscular effort to bring the lips together; nor do the jaws come so close that the lips are unduly turned outward at the edges.

Care should be exercised to make sure that the lower bite is nowhere raised from the lower ridge by the pressure of the upper bite. This is most apt to occur when the lower bite is too low in some portion. The

\* Dr. G. H. Wilson, Cleveland, sets all teeth except the second molars on a plane. He then elevates the second molars in both plates till three-point contact is secured. Dr. J. H. Prothero determines the condyle path for each case, and gives both plates that degree of compensating curve which keeps the posterior of one side always in contact.

pressure of the upper bite then raises the lower bite until the occlusal surfaces lie in contact and the bites appear correct.

Such raising of the lower bite can be guarded against by drawing back the lips, thrusting an instrument between the occlusal surfaces of the bites in different regions and trying to separate them while the bites are in contact. If the lower bite can be pressed down without making undue pressure on the lower ridge, its occlusal surface at that point needs building until the bite can no longer be moved.

#### GETTING RIGHT RELATIONS OF THE JAWS

Getting the patient to bite the jaws together in right relations is much easier with correct bites than with any other.

Nothing should be said to the patient as to the importance of biting naturally or correctly, because the efforts of the patient to assist prove real hindrances. If the upper bite has been adapted to the upper model with care, it will have sufficient suction to keep it up during bite making. This is particularly true if base-plate composition is used, since this will permit fine suction and will give the bite great stability.

The trimming which both bites require will necessitate the patient opening and closing the mouth a number of times; the more times the better, because with repeated closing the apprehension and strange feeling give way to a sense of familiarity. By the time the dentist is ready to establish the relations of the jaws the patient will be biting quite uniformly. This will be the easier of attainment if, during the time of trimming either bite, the other one be left in the mouth.

When the bites are properly trimmed and both are in place have the patient open and close the mouth a number of times and observe whether the jaws close in the same position each time. Keep the patient at it until the jaws close as desired, making a little backward pressure on the point of the chin if necessary. The patient will soon come to a natural and correct articulation.

One of the best guides as to whether the jaws are biting in proper relations is obtained by observing closely the movements of the condyle during the opening and closing of the jaws. With a little practice one can readily determine when the condyle is in approximately the correct position. When the jaws are closed on bites which separate them properly, the head of the condyle will usually be found about twelve millimeters forward of the external opening of the auditory canal and nearly on a level with it. Any protrusion of the lower jaw will move the condyle forward.

When the labial surfaces of the bites have been finally trimmed to give the lip the proper expression, the bites may be fastened together by means of heat, or with staples, or their relations may be indicated by

vertical marks across both bites. The bites are now ready for the selection of teeth and for mounting the models on the articulator.

The next article will show how such bites act as guides to the selection of proper teeth for the case in hand, and the selection will be surprisingly easy and rapid. It will appear next month.

### WHAT HE IS GOING TO DO WITH HIS FIRST TOOTH



**JANUARY.**—Am born. Didn't want to be. Object immediately, as loud as I can. Younger brother born seven minutes later. Looks like a fool, but may improve as he mellows with age.

**FEBRUARY.**—Catch a cold. Give it to younger brother. He's sicker than I am. Very nearly settles him.

**MARCH.**—Catch a nice rash. Pass it on to the other cove. Pretty well winds up his clock.

**APRIL.**—They christened us. I'm Augustus, and he's Alexander. Don't he look an ass of an Alexander. I'll kick him when he sleeps.

**MAY.**—Got the nettle rash. Hooray! so's he—only worse.

**JUNE.**—They don't think they'll be able to rear him. He's to have cod-liver oil. Can't help laughing.

**JULY.**—He's been squalling awful. Nurse says it's his nasty temper. I know it's a pin, but I ain't going to tell.

**AUGUST.**—We've got a new nurse. Alexander's got a blister on the end of his nose. They don't know what it is. He is to have a powder.

**SEPTEMBER.**—I've given him the scarlatina. He seems resigned. I've nailed his feeding bottle.

**OCTOBER.**—I've got a new game now—poking Noah's wife into his ear when the nurse ain't looking.

**NOVEMBER.**—We're beginning to walk. He's weaker on his pins than I am, so I can shove him over easy.

**DECEMBER.**—I am beginning to cut my first tooth. As soon as it's through I've made up my mind to bite Alexander.

## ANESTHETICS, WITH SPECIAL REFERENCE TO SOMNOFORM

GEO. C. HAFFORD, M.D., ALBION, MICH.\*

(The opening paragraphs of this paper gave a brief history of anesthetics and of the advances made in drug knowledge during the last century.—EDITOR.)

. . . Since the middle of the last century great changes and discoveries among drugs and drug properties have been made; . . . but little that is new has been done in anesthetics except to learn more perfectly their actions and the better methods of their use. It would seem only natural that during this long period newer, and possibly better, anesthetics might be discovered. . . .

Lately my attention has been called to the new anesthetic somnoform. So favorably have I been impressed with its several good qualities, its apparent safety, its rapidity and pleasantness, its freedom from all unpleasant after effects, that I wish to call attention of the Section to it. I am well aware that the small number of cases I have personally to report does not count for much, but they have been enough to make a profound impression on me, and I hope others will at least investigate, as I feel sure that if they follow it up they will be satisfied with the results obtained. It is with some hesitation that I speak about somnoform. As a rule, we "fight shy of" a proprietary preparation; "we have to be shown." However, many articles of great merit have been introduced through this method.

The question is sometimes asked, "What is the best anesthetic?" It cannot be answered simply by naming one of the anesthetics. Before it can be answered intelligently the particulars of the case in which it is to be used must be known. No one anesthetic is best for all cases. As a general thing the safety depends on the one who is using it. Ether is the anesthetic in most general use, but there are cases where it is strongly contra-indicated. Thus what is best in one case may be not at all indicated in another. Because of this fact the surgeon and anesthesiologist should be of liberal minds toward new anesthetics. Experience may show that in certain fields they may be of great value. It is with this in mind that I have investigated somnoform and bring it to your attention.

Somnoform is a transparent and nearly colorless liquid, said by the manufacturers to contain ethyl chloride 60 per cent., methyl chloride 35 per cent. and ethyl bromide 5 per cent. It usually comes in glass

\* Read before the Michigan State Medical Society, 1908.

capsules containing 3 or 5 c. c., but it can be obtained in larger containers. When a capsule is broken a very volatile gas results, which, when inhaled, produces the narcosis. Somnoform was discovered in 1895 by Dr. Rolland, Dean and Professor of Anesthetics in the dental school at Bordeaux, France. He spent several years investigating and experimenting with different combinations of old and new anesthetics. Since the discovery of somnoform its use has become quite general among dentists. Comparatively few surgeons, so far as I know (at least in this country), have had their attention called to it.\*

The use of ethyl chloride has become quite common for minor operations and to precede ether; I have been using it three or four years. And since somnoform is 60 per cent. ethyl chloride, one might infer that ethyl chloride and somnoform would act about alike. I find, however, that there is a vast difference between the two. Somnoform is pleasanter to inhale; it induces anesthesia more promptly; the anesthesia is more prolonged; there is a period of analgesia accompanying the return to consciousness during which short operations can be completed, and there are no unpleasant after effects. The quicker induction of anesthesia is said to be due to the rapid diffusibility of the methyl chloride, which forms 35 per cent. of the mixture; and the longer duration and analgesia are attributed to the action of the methyl bromide.

The use of nitrous oxide has a most important place in surgery, but the cumbersome apparatus makes it inconvenient, and it is unavailable for use in the different homes. The apparatus for administering somnoform is not heavy or cumbersome.

The administration of somnoform is more pleasant than that of nitrous oxide. It is fully as rapid; there is no cyanosis; the anesthesia is longer, and the excitable period is less frequently present. The non-relaxation under gas, the frequent struggling and the cyanosis are very disquieting to the operator who is not accustomed to them.

Somnoform seems to be as safe as nitrous oxide, which has always been called our safest anesthetic, and much safer than ether and chloroform. So far its use has been confined to minor cases requiring only short periods of anesthesia, but there seems to be no reason why it should not be used for more prolonged work. It has been used for thirty minutes with practically no change in the pulse, respiration or blood pressure.

Chloroform is usually charged with one death in 2,000 or 3,000 cases. The latest figures I have found are from Beran and Lexar, who give one death to 3,258 cases under chloroform, and one ether death to 14,987 cases.

\* Since reading this paper I have heard that Dr. Roswell J. Park and Dr. M. D. Mann are enthusiastic somnoform users. (Author.)



There is a vast difference between deaths *under* and deaths *from* an anesthetic; this distinction is taken too little into account when we look up the statistics. For instance, in 1847 arrangements were made in the Royal Infirmary in Scotland for the demonstration of chloroform. For some unknown reason the anesthetist, Simpson, did not appear, and the operation was completed without the anesthetic. The patient died. Had this patient died while under the anesthetic it might have been the death blow to that drug. Two days later the test was completed on another patient with great success. A case somewhat parallel to this occurred in Columbus recently. A woman, who three weeks before had taken somnoform with success, came in to have a piece of root extracted. She spoke of a feeling of dread and hated to take the somnoform; as the operation was trivial the dentist did not try to use an anesthetic, and she died in the chair. Such cases simply prove that large numbers of tests are needed before any reliable statistics can be had.

The amount of any anesthetic in the blood does not determine the anesthesia; that depends on the quantity which acts on the central nervous system; hence the danger in giving a large quantity is the danger of getting an excess of anesthetic in the blood and the possibility of a cumulative effect. Somnoform, ethyl chloride and nitrous oxide are rapidly diffusible; they show their action sooner than chloroform and ether and we are not so apt to get such cumulative effects. With somnoform and ethyl chloride the narcosis is produced independently of asphyxia; this cannot be said of nitrous oxide, hence we would naturally conclude that the use of the former agents are more physiological; and if the claim of non-heightened blood pressure continues to be substantiated, somnoform would seem to be safer than gas for old people with hardened arteries. We only await more confidence to use it in longer operations.

There is much controversy as to whether the heart is ever directly affected in either ether or chloroform poisoning, or whether the dangerous symptoms are not always due to failure of respiration.

The evidence is of a very conflicting nature and the question is by no means solved. Ether is a cardiac stimulant, and we would expect an increased blood pressure; but what we get in both ether and chloroform is lowering, due to vagus inhibition.

In a report by Dr. Turnbale of deaths from chloroform and ether, he concludes that the blood is changed in character, lowered in pressure, with weakened heart action and structural changes. Dilatation of the heart occurs at all stages and on both sides of the heart. In thirteen cases out of forty-three there was cardiac failure first. The heart may stop first with ether, but usually it is the respiration. In 1896 there

was reported thirty deaths from chloroform in dental chairs. Ether is estimated to be seven times less dangerous than chloroform.

In regard to the danger aspect of somnoform I have been able to find but little in either text-books or current literature, but most of what there is is favorable. The Long Island Society of anesthetists discusses ethyl chloride quite fully and speaks favorably of somnoform, but little seems known except by those few who have made a study of it. Some English works speak unfavorably of it, but give no experience or unfavorable reports. Thus Luke says, "There is no advantage over ethyl chloride, and its popularity is waning. Ross and Carliss state, "Somnoform has no advantage over ethyl chloride, and is probably less pleasant to take and leaves more after effects." I think these statements show an unfounded prejudice. Luke says, also, that nitrous oxide anesthesia is not due to asphyxia, though most Americans assert that it is.

It seems proven that nitrous oxide, even though given with oxygen, displaces the latter in the corpuscles, and thus gives the same asphyxia as if there were an absence of oxygen. Patton says, "Somnoform is supposed to be governed in its entry, transit and exit from the body by much the same condition as those affecting the action of oxygen." It increases arterial tension and rate of the heart, is said to produce changes in the nueron which vary in different portions of the same brain. He quotes Gray, of Melbourne, and Cole, who speak favorably of it.

Except in duration of anesthesia, somnoform seems to me without a doubt far ahead of any other anesthetic we possess. As to safety, it is claimed that there has been two deaths in 800,000 anesthetics, and that these were not normal cases. One of these deaths occurred in Grand Rapids, Mich., and one in Rockford, Ill. I have not been able to get many particulars regarding these cases, and doubt if they have been reported. One died one-half hour after the operation; was said to have had spells of collapse before. The other case died in a dental chair. Other cases of death in this country are claimed to be from ethyl chloride. Two deaths also from somnoform are reported from across the Atlantic.\*

Rarely ever are there symptoms which are disquieting when one learns to know the agent. Dr. Rolland reports 25,000 administrations without an unpleasant symptom. One would here make a little allowance for the natural enthusiasm of the inventor; what would not be a disquieting symptom to him might be very much so to one less acquainted with the action of it. But when we read of 50,000 adminis-

\* A recent number of the *Journal of the American Medical Association* gives a report of deaths in England from it.

trations given by dentists and others all over the country, many of them men who have had no special education in anesthesia, perhaps who have never seen it used before—when we get this kind of a report from all kinds of operators without a death, and with almost universal praise, it seems that there must be something extraordinary about it. Ought we not, in a slang phrase, to “sit up and take notice?”

According to the manufacturers up to March a year ago, these four deaths have occurred in 1,000,000 administrations to patients from 2 to 80 years, and with no manner of classification of what the cases were or what kind of men administered it. Since then I have been unable to find any deaths recorded. During this time there have been 18 deaths recorded in the journals from ethyl chloride. The latter, by the way, is not so very new; it was used first in 1848. In 1880 a commission from the British Medical Association condemned it, and in 1895 reintroduced it. It does not, as a rule, cause complete muscular relaxation.

These statements concerning somnoform may sound extravagant. Some of us dimly remember to have read of occasional fatal cases; to have heard that it was so extremely rapid that it was correspondingly dangerous; to have been told or to have understood that it was nothing but ethyl chloride, etc. Only strong and repeated assurance induced me even to give it a trial, and when I finally did, in the first few cases the least uneasiness on the part of the patient was a cause for alarm and coincident uneasiness on my part; but I finally came to have much confidence in it, and to think that a few bad cases that I had read of might have, as the somnoform people claimed, been widely published and made much of by those who were interested in other anesthetics. Dr. De Ford, who has recently published a book on general anesthesia, gives great praise to somnoform. He reports only ten cases of nausea in 4,000 where blood is not swallowed. Dr. C. M. Paden, who has made a considerable number of laboratory experiments with somnoform to ascertain its exact action, finds that it is not a depressant. The pulse and respiration are at first stimulated and then remain normal even after extended use. Heightened blood pressure by nerve stimulation during anesthesia returns immediately to normal after cessation of the stimulant. In animals where it was pushed to the limit, death was always from failure of respiration; the heart beating for some time after the respiration had ceased; enormous amounts were often required to stop the respiration and artificial respiration usually brought the animal to life. After 30 minutes of deep anesthesia the animals were usually in a satisfactory condition. In experiments on himself (and all these experiments were made in the presence of a number of scientific and non-interested men), using the sphygmom-

cter instead of the direct blood pressure from the femoral artery, all the phenomena seemed to be repeated. Dr. Paden is an expert extractor of Chicago, a practical man who uses somnoform almost exclusively.

At the present date (December, 1908) I have used somnoform in about twenty cases, all minor work, principally teeth extractions for dentists, the rest being mostly office work, abscesses, felons, etc. In one case the patient was kept under twelve minutes by using three tubes, and there seemed no reason why it could not have been kept up longer. There was no stertor, strabismus or disquieting symptoms. I have taken it myself, for teeth extraction, with perfect ease so far as I knew, and its use was easy and pleasant.

In certain nervous persons and alcoholics there is a marked excited stage, but this we all know is usual with any anesthetic and can be controlled best by the personality of the operator and confidence of the patient. When this stage occurs with somnoform it is very brief.

In short, then, we seem to have this: a safe anesthetic; a very rapidly acting one; one giving a longer anesthesia than gas and one which can be continued for an unknown length of time; one which can be transported easily; one causing practically no nausea or unpleasant after effects; one which we can use in more different conditions than any other; one which is par excellence to use as a preliminary to one of the other agents.

There is a special inhaler made for somnoform which is very simple, and is so arranged that the anesthetist can at will regulate the amount of air the patient is getting. The face-piece is so arranged that it can be easily detached from the other parts and used to continue with some other anesthetic if wished.

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*Of course, clothes don't make the man, but they make all of him except his hands and face during business hours, and that's a pretty considerable area of the human animal. A dirty shirt may hide a pure heart, but it seldom covers a clean skin. If you look as if you had slept in your clothes, most men will jump to the conclusion that you have, and you will never get to know them well enough to explain that your head is so full of noble thoughts that you haven't time to bother with the dandruff on your shoulders. And if you wear blue and white striped pants and a red necktie, you will find it difficult to get close enough to a deacon to be invited to say grace at his table, even if you never play for anything except coffee or beans. . . .*

*—Letters from a Self-Made Merchant to his Son.*



**GIVING PATIENTS PROPER CONCEPTIONS OF DENTISTRY AS A MEANS TO BETTER FEES**

The experience of those dentists who have succeeded in giving their patients right conceptions of the importance of good dental service shows that it is possible to get excellent fees according to the location, and get them promptly.

This would mean that any dentist now struggling to lay up a bare competence would really prosper; that he and his family would enjoy comforts and luxuries all through life.

But how can it be done? How can the dentist, situated in the small town or small city and surrounded by dentists who are anxious for business at almost any price, raise his fees and extend his practice?

We may profit by studying how others handle us when we are the buyers. We can apply the lesson to our own practices. Suppose you accompany some lady of your own family to buy dress-goods. Your lady has a moderate-priced silk in mind. The salesman first shows her that. Then he says "Here is something a little better," at the same time showing the sample. *He doesn't say much, if anything, about the price. He talks quality, durability, appearance, etc. He raises the mental conception of the value which the customer has till the silk first*



shown can no longer fill the mental picture, and it is discarded because it fails to please and the better silk is purchased. He has led her through four well-defined mental steps, attention, desire, conviction and action.

All luxuries are sold on this basis. Why does a family who can ill-afford it buy an automobile? Because the mental picture of the possibilities of pleasure over-rides the thought of the actual cost. Are they thinking of expense, accidents, dangers? So long as they are, they will not buy. But when the mental conception paints strongly enough the pleasures of swift rides through green fields, along fine roads and by pleasant scenes, they will readily part with more than the entire family would spend for dental work in a lifetime.

This was recently proved by the experience of a Detroit dentist. After much haggling a patient accepted a bridge at \$125. An automobile salesman came in while the bridge was being fitted. The patient wrote a check for the bridge at \$125, remarking how much dentistry cost. He immediately afterward wrote the salesman a check for \$3,725 to pay for a new automobile, handing it over in plain sight of the dentist. His mental conception or picture of the benefits he would receive from dentistry was dim and uncertain. The automobile salesman had been more skilful. He had painted an attractive picture in glowing colors. And the man paid according to the pictures.

*The mental picture is what influences people:* Make the mental picture of the benefits of dentistry strong enough and patients will willingly pay excellent fees for dental work. Shrewd dentists realize this. *They take as much pains to educate their patients as they do with their work.* They paint in their patients' minds mental pictures of health and vigor from perfect mastication and digestion; of the beauty of skilfully restored teeth, and of their influence on the features. The quality of the work can be steadily raised in this way and the fees advanced.

Here is a concrete case:

Janes is a dentist in a small city. He gets \$1 for an amalgam or cement filling. There are six other dentists in town. Four of these work for fees which are no greater and sometimes are a good deal less. There are two dentists who get better fees.

Janes decides to see if his practice cannot be made more profitable. He realizes that in proportion to the value of his services to the patients, his fees are very small: *In other words, he does not get his proper share of the benefits.* This realization is the first necessary step. He must have conviction in his own mind before he can instil confidence into the minds of his patients and carry it over to the point of action. That will be the measure of his success—carrying conviction into action.

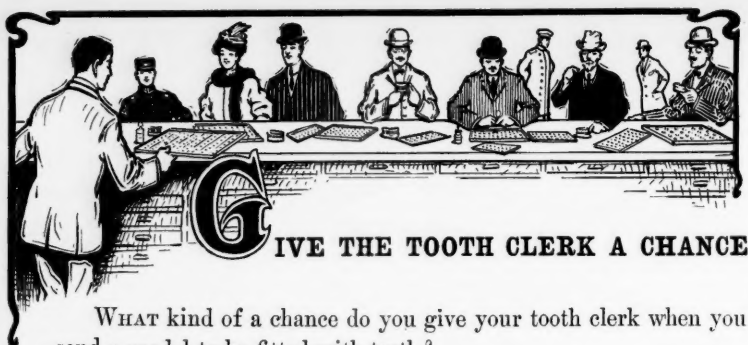
He knows that if he could get \$2 for an amalgam filling, he could

make a much better filling and at the same time receive more profit. He begins on the very next patient. It is a case for a bicuspid amalgam filling. He offers the usual filling at the usual price, explaining that if the patient will permit, he can put in a much better filling at a little higher price. *But he doesn't mention the price till he has painted a clear-cut mental picture of the better filling in the patient's mind.* He explains that he can take time to prepare the cavity better, that he can so contour the filling that it will do much better service and last much longer. He honestly enumerates the resulting benefits.

When the patient asks the price he says \$2. Maybe the patient does not take it. But by-and-by one patient after another *will* take it. Many of his amalgam fillings will bring him double what they brought before, and with success comes that mysterious power of conviction which success invariably gives. This helps him convince a still larger percentage of patients.

Many dentists are awakening to these possibilities. They build in their patients' minds clear-cut mental conceptions of the importance, beauty and final economy of good dental work, and a large percentage of patients willingly pay in proportion to the elevation and strength of the conceptions which the dentist builds in their minds. This line of patient-education will well repay any dentist.





## IVE THE TOOTH CLERK A CHANCE

WHAT kind of a chance do you give your tooth clerk when you send a model to be fitted with teeth?

Suppose some one sent you an upper and lower model without a bite or with a bite that told you practically nothing. You would not know where the lips met. You would not know how high the lip raised nor how wide the mouth was. In fact, you would know practically nothing except the shape of the ridge and the shape of the jaws. If you received such a model, wouldn't it be difficult, even with all your technical knowledge, to select teeth to suit another man?

If you were not a practical dentist and had never made a plate, if all your information had been gained from merely handling a tooth stock, wouldn't you find it pretty difficult to make a correct selection?

And when you add to this that you are selecting not to suit yourself, but to suit somebody else and it may be that somebody doesn't know just what the case should have, aren't the difficulties greatly multiplied?

If you are sending models without bites, or bites without complete markings, you are putting your tooth clerk in this position.

There are three ways to give your tooth clerk a chance to suit you, all of which are greatly to your advantage.

The first and best way is to make a correct bite. Get the exact dimensions of the required teeth, crown or facing and order by mould number. It is then unnecessary to send a model or to leave anything to the tooth clerk's judgment. If you specify correctly, the results will be more satisfactory than they could otherwise be.

The second method is to give the length of the central, the length of the combined bite and shut in the anterior, the width of the anteriors and the width of the full 14. These should be given in millimeters or fractions of an inch. This gives the tooth clerk your exact dimensions.

The third method is to send a properly marked bite with the model. The marks on the bite should show the length of the centrals, the location of the surface of the gum or ridge, the location of the distal angles of the cuspids and the locations of the distal sides of the second molars.

Methods second and third require nearly all the work of the first method without being quite so satisfactory.

But until you adopt one of these methods you will never obtain exact results or give your tooth clerk the same show you would like to have if you had his job.

### WHO SHALL PAY THIS BILL?

#### A CASE COMMON TO EVERY DENTIST

A PATIENT presents with a very sensitive cavity to be excavated and filled. She is nervous and apprehensive. A slight hurt is so magnified by her fear that soon the dentist can scarcely touch the cavity.

The dentist is very careful. But under the circumstances he loses much time. Finally, after being three or four times as long as he should be, the cavity is ready for filling. The chances are he has not prepared it as well as he would under other conditions. But his patient is worn out. Her fear and nervousness have tired the dentist much more than an equal period of work would have done.

Suppose the dentist practises in a community where the fees are not high. He does not charge by the hour, but so much per operation.

This case was one for which he would ordinarily complete the cavity preparation and filling in thirty minutes and receive \$2.

But under these conditions it took one hour to excavate and thirty minutes to fill. And it burnt up half a day's nervous energy.

Because of that which would be said by the patient and her friends and because of competition, the dentist fears to charge for the time consumed.

What would you do?

As a business man (and the practice of dentistry is part business) how would you avoid waste of time under such conditions?

Would you make the patient bear the pain and get through?

Would you (in your own practice, mind you) defy gossip and criticism and charge for all the time?

Would you habitually "stand for" the loss of time?

An answer to this question will help a puzzled dentist.

Will you help build a better business system in dentistry, stating your actual practice in such cases? If so, address "Editor Prosthetus."

Maybe somebody else has an answer you will be glad to read, and so we shall help each other.

### WATCHMAN—WHAT OF THE NIGHT?

REFERENCE has frequently been made in our literature, particularly in recent years, to the spectacle of so many dentists approaching old age without the necessary means to take care of themselves comfortably

after their days of useful practice are at an end. This matter cannot be agitated too frequently, if we are to improve the material status of the profession and place its members in the way of attaining independence. Not by any means that it would be desirable for a man to slave and economize and be niggardly with the idea of hoarding up something so that he may retire and quit work and rest on his oars after a few years of activity. It should be a pleasure for a man to work as long as his effectiveness is unimpaired, or in other words, as long as he can be useful; but the pitiable spectacle is often presented of a man being obliged to struggle along and try to earn the bare necessities of life long after he has the ability to render the public good service and when the public has learned his limitations and are beginning to turn the cold shoulder toward him. Too frequently he finds himself bereft of even the small patronage which his feeble strength would permit him to care for, on account of the distrust which age usually brings in any pursuit demanding technical skill for its practice.

The lesson of all this is that the young man or the man in active practice should look into the future and so conduct his affairs that he will have something when age overtakes him that will make him independent. And this is not such a very difficult thing to do, even in the practice of a profession which is supposed to bring such meager financial returns as dentistry. Most of the poverty among dentists is due to sheer carelessness or thoughtlessness, the failure to estimate the true value of a dollar and neglect of the necessary forethought to plan one's income and expenditures so that the balance will be on the right side at the end of each year. It seems such a hard lesson for some young men to learn that the future is shaped so positively by the present that the conduct of the present becomes a very important consideration. The old adage, "As ye sow, so also shall ye reap," applies to this question as well as to one of abstract morals, and it is well for every man to pause in the fullness of his powers and ask himself—what of the night?—the night of life, or the night of illness, or the night of adversity when a man's only resources are those which he has provided for himself in palmy days. It is worth thinking over—meaning as it often does so much for the material comfort and mental peace of one's declining years.

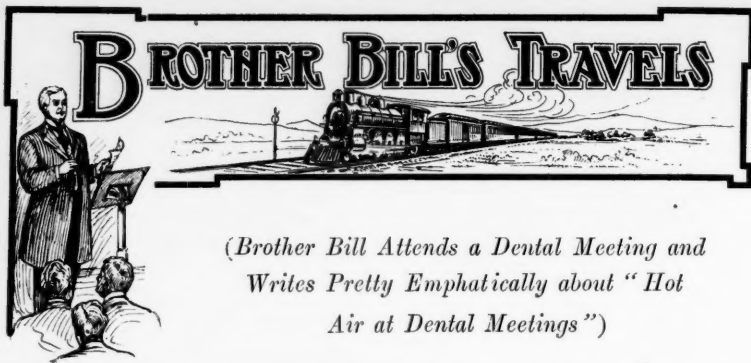
C. N. JOHNSON, *in Bur.*

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### USE OF AN ASSISTANT

No operator should take time to pick up instruments, or to go to the laboratory for anything an assistant could do. The assistant should be well enough trained to know what was coming next. I do not expect

to look for my forceps, or to look for a tool of any character when the operation comes; I expect my assistant will see that it is in my hand. I take the attitude that a man's time is worth whatever he thinks it is and he cannot afford to do what an assistant can do, who is paid from six to fifteen dollars a week. He cannot afford to do those things, as his time is worth too much. I keep two young ladies to do these things for me. I do not go to my laboratory; they take care of my vulcanizer when that is cared for, they do the polishing and do every essential that comes to hand, which their knowledge enables them to do. It is worth something to them to have the opportunity to do it, and it is worth more to me and to my patients that they are able to do it.—DR. NOBLE, in *Western Journal*.



*(Brother Bill Attends a Dental Meeting and  
Writes Pretty Emphatically about "Hot  
Air at Dental Meetings")*

DEAR JOHN: I've just returned from an evening at the local dental society. I wanted very much to go to the theater, but Dr. A—— was down to address the society. I've never met him, but I've heard his name for years, usually coupled with praise. So I denied myself the theater and got to the meeting on time.

There were about 150 dentists there, some of them with national reputations. I was very glad to meet them. They seemed like fine fellows.

After a few preliminaries Dr. A—— was introduced. He unfolded a goodly roll of manuscript and we settled ourselves for a treat. What do you think? He spent forty-five minutes developing these facts:

*First.* That he believed cement made quite as good an attachment to the cavity side of a porcelain inlay which had not been etched as when the inlay had been etched.

*Second.* That before setting a porcelain inlay it was his custom to warm it to body temperature. He believed the attachment of the cement was strengthened thereby.

Without noticing the accuracy of the facts, just think of the mountain of hot air he built about those two little statements. After a few minutes I simply *couldn't* pay good attention. I looked out of the corners of my eyes and found others doing the same. And I wished heartily I was in the seat I had selected for "The Music Master."

You know I believe in dental societies, that I work earnestly for them and that I invite every new dentist who comes to our town to join.

You know I believe in having papers. The information which a well-grounded, plainly stated paper affords is inestimable. It becomes part of the theory and practice of many men. It is one of the tiny wavelets by which the tide of good dentistry advances. It is because of such papers and the collateral work of the men who give them, that dentistry is so far advanced in America. And those who love the profession should watch with jealous eyes for any falling off in the quality.

The more I attend meetings the more I feel the urgent need of reform in many of the papers presented. They contain too large a proportion of hot air to the amount of real, practical information. Around a mustard-seed of truth some one builds a mountain of words. Many authors feel that a paper should be constructed as follows:

*First.* A preamble of pleasing form. It is not expected to contain any facts or much sense, but it must be a literary gem. (It is generally much too long.)

*Second.* A mustering of the grounds for the paper. (Save with our best authors this is usually too long also. It frequently embraces much irrelevant material, and it often shows compilation of matter by recent re-reading of text-books.)

*Third.* The fact or theory the author wishes to establish. (This is the real heart of the paper. Only too often it is not sufficiently developed. Perhaps this is because the author has consumed so much effort on his introduction and groundwork, that the fact or theory no longer rears its head far above them, even in his own thought.)

Lastly comes the conclusion frequently accompanied by apologies for the paper.

This sort of a paper is not fair to the man who presents it or those who listen.

Most of the men who furnish papers for societies are much above the average in their time and place. They are usually good practitioners, at least in their favorite branches. In their own offices I find them sensible, modest, ambitious dentists, largely free from foolish pretense. They have the good of the profession so at heart that they are willing to put in extra labor without financial reward. How great would be the profession's gain did they but grasp the value of being merely themselves when they occupy the time of a society!

I believe the men who listen to the papers at society meetings are, without doubt, the best men among the membership. They are the most eager to receive new light and the most willing to work it out into accomplishment. Their time is valuable, too, and it should never be wasted. Yet an audience of such men is frequently compelled to sit for an hour or more to learn facts which could easily be stated in five minutes.

Now let me give you a few pointers that may save your reputation some time. Without regard to the accuracy or reasonableness of whatever facts you may offer, such long-windedness works harm in three directions.

*First.* It lowers your reputation. Many subjects require considerable time for intelligent presentation. It is also necessary to

make very plain the grounds for any radical innovation. For such papers ample time is willingly granted; but for a paper built on so slight a foundation as that mentioned above to occupy more than a very few minutes injures the standing and influence of him who reads it.

*Second.* It is unjust to the men who assemble to listen. The time occupied by this paper was worth a good deal of money, and many of these men needed it for relaxation. They didn't get even that. If you can get any relaxation listening to a paper that makes you tired, you can do more than I can.

*Third.* Such papers do much harm to the cause of organization and society work among dentists. Only a small proportion of graduate dentists are members of societies. And there is only one way to gather in and keep any great percentage of the outsiders; for it avails little to gather them if they are merely nominal members with slight interest and rare attendance.

The only way to keep them is *to make the meetings so interesting and profitable that they will see their own profit in being present.* This is what the officers of the societies are trying to do. When the members realize that practical information, such as every member possesses concerning some portion of his practice, is the valuable contribution, one step in advance will be made. And when contributing members are convinced that the literary form of the contribution is not important, so the matter be sensibly put, a new day in society papers will dawn.

I'm glad you're doing society work. Help all you can. But don't get a reputation for delivering "hot air."

Yours,

BILL.

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It's happened pretty often in my time that I've seen a crowd pelt a man with mud, go away, and, returning a few months or a few years later, and finding him still in the same place, throw bouquets at him. But that, mark you, was because first and last he was standing in the right place.

It's been my experience that there are more cases of hate at first sight than of love at first sight, and that neither of them is of any special consequence. You tend strictly to your job of treating your men square, without slopping over, and when you get into trouble there'll be a little bunch to line up around you with their horns down to keep the wolves from cutting you out of the herd.—*Old Gordon Graham.*





# PRACTICAL HINTS

## AN UNUSUAL CASE OF BRIDGE- WORK

By W. F. WALTZ, D.D.S.,  
LEXINGTON, KY.\*

. . . THE case in question was only a small four-tooth structure, extending from the lower second bicuspid to third molar on left side. The patient was a railway engineer with the upper teeth in good condition, but because of the former loss of two lower molars and one bicuspid on right side, and two lower molars on left side, the surface for mastication was indeed limited. Upon close examination I found as had been supposed, the case an ideal one for bridgework, making a bridge of five teeth on right and four teeth on left side. The span on right side, with two molars and one bicuspid missing, had a slight undercut, while the other extending from second bicuspid to third molar had rather a heavy undercut, but seemingly not heavy enough to prevent a bridge going on.

I had but little difficulty in placing the five-tooth bridge on right side, it going on in position with just a little force. But after preparing the teeth, making my abutment crowns and finishing my four-tooth structure for left side, in attempting to place bridge in position for first trial, I was very much chagrined to find that, because of the undercut, it absolutely refused to go into position. In fact, when I would start one crown into position, the bridge seemed to overlap the other tooth abutment by almost half of the other crown. I examined it very closely and as nearly as I could measure it with my eye, it did not seem possible for the apparently small undercut that existed to be responsible for so much of an overlap. I immediately came to the conclusion that the impression had in some way been wrong, or else something had been moved out of position in making my investment.

I then sawed my dummies apart from the crowns and took another bite and impression and made over the bridge using extreme caution, both in taking the impression and making my investment. After finishing up my bridge, I again attempted to try in position, but with like result as before. I finally realized that I was up against a very stubborn undercut.

I then, with a carborundum disk, cut as much off of the mesial surface of the third molar as the sensitiveness of the tooth would allow,

\* Read before the Kentucky State Dental Association at Louisville.

but with only a slight difference so far as the final result of the bridge going on was concerned.

I had just about made up my mind that the only possible way out of the difficulty was to devitalize the third molar and cut away the necessary amount of tooth structure to allow the crown slipping over, when the thought occurred to me, "why not jack the teeth apart and save the life and vitality of the tooth." So I took an impression of the case, made an engagement with the patient, and in the meanwhile fitted up a jack-screw to meet the requirements of the case and one that would move the teeth rapidly.

Upon the return of the patient to my office, I placed the jack in position; in about ten days' time I had the teeth jacked far enough apart to permit of the bridge going on into position with but little difficulty, and with just a slight grinding on one of the dummy cusps, I had an excellent occlusion.

I set the bridge and the patient has now worn it for over two years and it has given entire satisfaction to both operator and patient.

I don't know whether or not any of you present have experienced like difficulty and resorted to the same method of dealing with undercuts. I am sure I never heard of its being done before, but, doubtless, "There is nothing new under the sun."

If any of you experience like difficulty with undercuts and ordinary methods fail, the jack will bring you out of your trouble in a very short time and in an easy manner.

*Starting Gold Fillings with Cement.*—Using a quantity, not too large, of a cement setting with moderate quickness, there is a ready and positive fixation of the first pieces of gold. There is no rocking or tipping. The pulp, when nearly exposed, is protected, weak walls are strengthened, gold is prevented from showing through thin walls, and with skilled manipulation positive anchorage is obtained in cavities in which it would be extremely difficult to pack or retain the gold in any other way.—C. A. BRACKETT.

*Removal of Amalgam Fillings.*—Hold a heated instrument on the filling until the heat is felt in the tooth. Bur out at once, when it can be cut like cheese. Use an instrument having a very slender shank with a bulbous end, one of the old "Wood's Metal" fillers of forty years ago. The slender shank prevents the heat from radiating too rapidly.—A. H. BROCKWAY.

*Mixing Cement.*—Having lined the cavity walls with a thick, creamy mix, the balance is to be made as stiff as it can be properly

spatulated. This proper stiffness of mix is indicated by the cement rolling up after the spatula instead of remaining on the slab as a smooth film.—W. V. B. AMES.

*Painless Excavating.*—Inject a dosage of cocain with adrenalin right at the very apex of the tooth, producing after a few moments perfect anesthesia of the nerve fiber. Especially valuable for the immediate extraction of a live pulp—WM. HIRSCHFELD.

*The Rubber-dam.*—The average dentist should have the dam applied to his own teeth by some careless man at least once a week. He would then use care in applying it for others. If in cold weather you would warm the clamp your patient would bless you. If in carrying the ligature between the teeth you are careful not to let it strike the gum suddenly, your patient will appreciate it.—F. M. SMITH.

*To Correct the Unpleasant Odor and Feeling of Rubber-dams.*—Wipe it perfectly clean with a damp napkin or sponge; dry thoroughly; dust with borated talcum powder. Rub it over lightly with the fingers and you have a smooth, slightly-scented satin surface, which will readily pass into the closest spaces without soap or cosmolin.—J. C. CARY.

*"Punching" the Rubber-dam.*—In a clinic given by Dr. G. D. Moyer before the National Dental Association, the rubber-dam was first marked with blue pencil and the holes burned through the dam, an improvement on the dam punch, each hole being reinforced with a rim of melted rubber.—*Dental Cosmos.*



## TAGGART PATENT DIGESTS

(FEW subjects are of more interest to dentists to-day than the discussions regarding the patents granted to Dr. W. H. Taggart, of Chicago, covering the use of the disappearing model in the art of casting. Should these patents be held valid by the courts, Dr. Taggart will control the casting process in the United States, and every dentist who makes any form of casting by this method, or who uses any other device than the Taggart Cast Inlay Machine, will be subject to a suit for damages.

Dentists are now divided into two groups. One group favors allowing the patents to Dr. Taggart without opposition. The other group favors opposition to that patent which covers the disappearing model and sprue. No one seems to oppose the patent on Dr. Taggart's Inlay Machine as a piece of mechanism.

Here are digests of three interesting editorials. One of them by Dr. Ottolengui in *The Items of Interest*, is quoted largely by Dr. Geo. H. Wilson, who replies in the paragraphs intervening between quotations.

The other digest is from an editorial in *The Dental Brief*.—Editor DENTAL DIGEST.

### PROCESS PATENTS AND ETHICS

In the December *Items of Interest* is a very entertaining editorial entitled "The Taggart Process Patent," and signed by the editor.

When one has finished reading this interesting article the question naturally presents itself . . .—why should there be a motive for such an editorial, and logic answers, because, first—the editor is financially interested; second—some indirect controlling influence; and, third—personal association and friendship for the patentee. The first reason we must exclude, for in a personal letter Dr. Ottolengui says: "At this point let me say for your information, that I have not and never have had any financial connection whatever with the Taggart Inlay Company; moreover, that I am not under financial obligation in any way to that company nor to Dr. Taggart personally, as I cheerfully paid cash for my machine as well as for all investments and wax which I have used. The rumors to the contrary, therefore, are slanderous and maliciously so, because I am convinced that those who originated the story are cognizant of its falsity." I have also a copy of a letter in my

possession written October 5th by a gentleman to Dr. Boynton from which I copy the following: "He then of his own accord (referring to Dr. Ottolengui), told me again that he did not own one bit of stock in the Taggart Company, that he paid cash for everything that he had received from him. His machine arrived at nine o'clock one morning, and ten minutes past nine he says his check was mailed in payment. He says he could not possibly take the stand that he has taken if he was in any way bound or beholden to Taggart or his company. He also told me that he would not stand for any process patent, citing his position in the Sheffield patents, and so on. . . .

Of the second reason we cannot speak; but of the third reason we can say what is well known, that Dr. Ottolengui has been a very warm and valuable friend to Dr. Taggart. We can appreciate the embarrassed position in which Dr. Ottolengui is placed and his desire to help his friend, but we cannot comprehend his indulging in the sophistry he has submitted in his editorial.

The following quotations penned in 1897 and copied from Dr. Ottolengui's editorial well expresses *our conception* of what our professional attitude toward patents should be.

"As to whether it should be considered professional or otherwise to take patents, is worthy of some consideration. As being in a sense the act of a tradesman, and therefore the antithesis of professional spirit, it has been held, especially in the medical world, to be unprofessional. But in this age of progress, it is time that musty old doctrine should be revised to meet the modern advance of thought. Sentiment should have less force and reason should hold sway. This does not mean that ethics should be set aside; but ethics, like all science, for ethics is a part of social science, is or should be subject of discussion, and if need be, of alteration."—pp. 204-5, 1897.

"It is therefore a short-sighted policy, and opposed to the welfare of the professional body, to cast ethical reflections upon the medical or dental inventor who takes patent upon an article of manufacture, which, when produced, is offered alike to all at a uniform price."—p. 205, 1897.

"But when one man discovers or imagines he discovers a new method of procedure in practice, it should not be legal for him to exact tribute from all that use that method."—p. 206, 1897.

"With a man who claims a patent for a process it is different. He furnishes to the practitioner nothing but a set of directions."—p. 206.

"The Protective Association has done a holy work in fighting patents. . . . But there never should have been any need

for such co-operation of dentists, nor for the expenditure of the money which it has required. The profession should unite in a request to Congress for the passage of a law prohibiting the granting of any patent, upon any method or process of treating or curing human disease."—pp. 207-8, 1897.

Immediately following these quotations the doctor draws his present-day conclusions as follows:

*"Thus eleven years ago I argued; First, that it is not unethical to take a patent. Second. That patents of one class are advantageous. Third. That process patents, of the kind specifically described, should not be granted. Fourth. That Congress should be petitioned to prohibit such patents. But nowhere do I claim that a dentist should count himself a member of a class, privileged to disobey laws which are binding upon other citizens."*

Here is a fine specimen of sophistry. The first argument—"That it is not unethical to take a patent," is not in keeping with the logic of his lucidly expressed opinions of 1897, and as they are quoted to show that his present attitude is consistent with his past record they must express his present convictions. The logic of his 1897 opinions is that it is wrong to take out a process patent (except a process of manufacture), but right to take out a patent for an instrument or thing which could and would be manufactured and put upon the market at a common price to all. . . . The second argument is correct. The third argument is literally true, but misleading in that it is paving the way for his attitude toward the Taggart process patent which he desires and attempts to convey the idea is of the class that he excepted in 1897. The first part of the fourth argument is true, and we must accredit to Dr. Ottolengui only praise for the arduous labor he has performed in the past toward this desired end. Had the profession as a whole been equally alive to its best interests there is little doubt that the law permitting process patents in medicine and dentistry could have been erased from the statute books, when the obnoxious part of the Taggart patents would have been impossible. The last sentence of this fourth argument is to me sophistry, while to Dr. Ottolengui and a few others it is probably very valid argument. Upon this one idea seems to hang the whole argument, of those favoring Dr. Taggart, why he should be paid his royalty. We thoroughly believe all laws should be enforced and obeyed, good and bad, for, to enforce a bad law is the surest way of having it revoked and wiped from the statute books, thus tending toward an ideal government. However, it is an exceedingly superficial ideal to conceive that we should yield blind obedience to any and every law irrespective of the kind and

intent of the law. There are two classes of laws, common and statutory laws. Common laws are of such a nature that they may not necessarily be written because they are such well-established principles that they appeal to the conscience as right of themselves. Thus, thou shalt not steal nor murder, are common laws and appeal to every person as just, and that to violate them is a crime. Statutory laws are laws because of legislative enactments, and their violation is more of the nature of an offense than of crime. In fact, it is possible one might commit a crime by not violating a statutory law. Thus a physician might chance to be present when his services immediately rendered would save a human life, while he violated a statutory law, because he was not licensed to practise in that state, he kept the common law that made him responsible for that life. Another feature of those statutory laws which regulate acts that are not wrong in and of themselves, is that they give the individual his choice whether he will comply with the desire of the law or accept its alternative, its punishment. He will be just as loyal to his state either way, provided he has not perjured himself nor defrauded the state. Thus in the dark ages when the kings made laws that their subjects should worship after a certain formula or be burned at the stake, the martyrs were loyal to both their state and conscience. When Dr. Ottolengui and his sympathizers intimate that those dentists who use the methods described by the Taggart Process Patent without Taggart's consent are disloyal to their state it is not necessarily true. It is no crime or wrong to use the casting process in and of itself, in fact, we are doing wrong by our patients if we do not use the method when indicated. We have every legal and moral right to argue with the state individually or collectively as to the validity of the patent; if, however, the state eventually assesses a punishment then we must pay the penalty. The only question is, whether we are men, *men*, or whether we are puppets, as the *Item's* editorial would have us be.

*"To the latter we have a significant reply to my prophecy in that I am informed that Dr. Crouse in declining to aid Dr. Boynton, declared that the Dental Protective Association was never formed to fight valid patents."*

As to this statement—Dr. Boynton is not a member of the Dental Protective Association, and Dr. Crouse was and is under no obligations to take up this case any more than you or I. As to the validity statement I know not, but I do know that I was informed by a member of a dental manufacturing house that Dr. Crouse said at the Manufacturers' Clinic at Cincinnati that he told Dr. Taggart that if he attempted to collect royalties from the dentists that he would fight him even if he had to reorganize the dental profession.



We do not know whether the Taggart Process Patent can be defeated in the courts or not, but we firmly believe that the patent will not be sustained by the courts. However, every effort must be made to present all of the evidence possible to the court, and this means our united moral and financial support.

As the invested and disappearing wax model is the principal factor in the process, we copy the following from Vol. 13 (May, 1871), page 280, *Dental Cosmos*:

#### METAL CASTING

The most wonderful castings in iron and bronze are made by using models of wax. These are embedded in moulds of fine ground earth, which are then heated red-hot. The mould is baked, the wax disappears, and the metal, when poured in, exactly takes its place. The wax model is often made in a gelatine mould, which, being very elastic, will slip off the object which is to be copied into metal.—(*Exchange and American Artisan.*)

There is much evidence to show that wax disappearing models is an old principle, and has been used in many kinds of work. As this is the only part of the Taggart machine or process that is necessary to produce cast inlays, crowns, bridges and plates, it follows as a natural sequence that if the courts do not grant Taggart patent rights to this old process, that no dentist need use any part of the Taggart patented machine or

#### TAGGART'S PROCESS PATENT

*"From the quotations which I have made it will be seen that at all times in the past I have had but one consistent notion of the sort of process patent that should not be granted. The Rubber Company, the Tooth Crown Company, and others cited, were all in one class. The 'inventors' offered nothing for sale that was tangible. Their 'processes' involved the use only of knowledge and skill coupled with the utilization of such mechanical instruments or appliances as could be purchased legally in the open market, and from others than themselves. These people had no possible means of obtaining revenue from their patents except by the sale of licenses, or by the exaction of royalties.*

*"Does the Taggart process patent come within this description? It does not. It is quite essentially different. Indeed, I must declare that I never had known of nor thought of such a patent. As far as my study of the matter had led, the facts seem to be as follows: Taggart invented a casting machine, and has secured patent on the same. To this apparently no one takes exception. An integral part of this machine is a flask of definite form. Secondly, in accordance with a well-established procedure*

*in patent law, his patent application was divided, and a patent on the process itself was asked and allowed. A close scrutiny of this process patent discloses the fact that it apparently cannot be conducted without using some appliance which may be claimed to be an infringement of Taggart's machine patent, unless Taggart's own devices be used. And it is one sort of infringement to make use of a machine, or any part, which is an infringement of a machine, or part, protected by a patent.*

*"Thus it seems that, unlike the Vulcanite and Crown Company patents, Taggart does have something for sale, and his process is one which requires the use of certain devices, which he has protected by patents, to which the dental profession as a whole takes no exception. The infringement complained of, therefore, is not merely that a patented process has been used, but also that in doing so the infringer is lending aid to a business competitor who is manufacturing a machine said to be an infringement of the Taggart patents.*

*"Now, whether this contention be true or false, whether other machines on the market infringe Taggart's or not, or whether the process of making a cast inlay is one that may be conducted without infringing Taggart's rights, are all matters which I cannot decide, and which I do not feel called upon even to discuss at this time. My purpose here is merely to advise our readers of the true status. If any man believes that the Taggart patents cannot be maintained in the courts, it is his legal privilege to combine with others in supplying funds with which to make the legal test. In doing so, of course, he renders himself liable to punishment, in some sort, in case the patents are declared to be valid.*

*"At this point it will be opportune to give the quotation from Dr. Taggart's attorneys, which sheds a light upon the question not afforded to the profession in the circulars which have been mailed from Washington. The following is an extract from a letter written to me by a member of the legal firm managing Dr. Taggart's end of the case, and is therefore official:*

#### DR. TAGGART ATTACKING DENTISTS

*"There is only one court in the United States from which a patent case can be taken as a matter of right to the Supreme Court of the United States, and that is, the Supreme Court of the District of Columbia. Desiring, therefore, to sue in the District of Columbia, it became necessary to find an infringer there, and the only infringer we could find was a dentist. The suit was not,*

in fact, aimed at the dentist, but at the maker. . . . The suit is for infringement committed by reason of the use of a machine manufactured by a well-known maker of dental instruments, and in all commercial ethics, the suit ought to be defended, not by the individual dentist, but by the maker of the machine. When we brought suit it never entered our heads that the maker of the machine would not come in and pay the expenses himself. Every commercial manufacturer makes it a practice to stand behind his purchasers, and we supposed when we brought suit that the individual dentist would be but a figurehead defended by the maker. This is a matter which ought to be defended by the maker of the machine, and if the dentists of this country are going to chip in and stand the burden, which the manufacturer in all ethics and good conscience ought to bear, they are merely being made catspaws of.

"We will call your attention to another fact which probably has not been mentioned to the profession. In our suit against Dr. Boynton we did not pray for damages, but merely asked that he be compelled to stop using the process. We have no intention of collecting damages from him in this procedure, and have asked for no damages. This fact can be verified by reference to the pleadings on file in court.'

#### THE ETHICAL AND LEGAL ASPECTS

*"Let us now for a moment consider the ethical aspect of this matter, as co-related with the legal. The dental profession has almost unanimously evinced its opposition to process patents. But as we have partly shown (a full discussion would require too much space) this Taggart process, while having many of the objectionable possibilities of other process patents, is nevertheless inherently different. For further example, the Crown Company had no way of realizing revenue except by royalty or license, and had nothing to sell, whereas the Taggart concern has something to sell, and having sold its machine cannot collect royalty or license fee. Nevertheless, this process patent, if valid, would certainly place within Dr. Taggart's means the right to issue licenses or to enjoin certain ones from using the methods at all. This is one contingency to be considered by those who decide to combine to fight his patents, because the Washington committee may be led astray by an over-confident attorney, and the Taggart patent may be proven valid after all.*

*"Let us suppose for a moment that it is valid. What are the men in our profession doing? A great many have said that 'it is unethical for Taggart to take a patent at all.' That is a question which could be debated from many angles; but suppose we grant that also. Because Taggart has been unethical enough*

to take out a patent, is it ethical conduct to use his invention without his consent? Is not the dental profession just a little arrogant and selfish on this proposition? Because we are dentists, and find it inconvenient to obey the patent laws, are we legally or even ethically entitled to break them? Of course it is very nice to be able to soothe our consciences by declaring, 'Oh, pshaw! That patent will never stand! No patent is valid, anyway, till tested in a suit.' The only trouble is that this is not true. All patents are valid till invalidated in suit, and if the suit be decided in favor of the patentee, all infringers are liable. This conjures up a comical possibility. Just suppose that the Taggart claims are sustained, will those ethical gentlemen who are infringing his patents because it was 'unethical for him to take out a process patent,' immediately make reparation to Taggart for their infringement, which was both illegal and unethical?"

The preceding is a very liberal quotation from the editorial in the *Items of Interest*. It does not seem as though it should be necessary to point out the sophisms in these quotations to intelligent men, and each should be able to form his own opinion of the motives for such arguments. It does seem that the editor of the *Items of Interest* is like a drowning man and that the straw at which he grasps appears as large as a saw-log.

Our conclusions of the Taggart patented machine and process are:

First—That the patent on the machine is perfectly justifiable, and is probably valid. That the machine is upon the market and any one can purchase it, if he wishes. Also, that the machine nor any part of it is essential to the process of casting perfect inlays, crowns, bridges and plates.

Second—That the essential principles of the process have long been known to science and that the courts will not hold them valid. That this process patent does not differ in principle from the Vulcanite and Tooth Crown patents. That the schemeful method of marketing does not relieve the perpetrator of the charge of moral turpitude. That to hold such a patent is treason to one's profession, and that to encourage such methods is abetting treason.

Third—That to accept the statements of opponent's attorney and misinformed friends, when they are contrary to known facts, is folly. Some of the facts are: "All dentists are ordering the Taggart Machine." "The businesslike dentist, because he wants no part in a law suit, either as principal or witness." (Part of an advertisement which ran in the *Dentist's Magazine* for one year.) When we couple this

threat with the facts, that the Taggart Cast Inlay Co. hold certain patents, have retained attorneys and on the 12th day of July, 1908, without warning, began suit against Dr. G. W. Boynton, of Washington, D. C., for infringing Dr. Taggart's *process* patents, it certainly would be stupid to permit a vampire to fan one to sleep.

Fourth—That a clause should be added to Sec. two of Article two of the code of Dental Ethics stating that the obtaining or holding an interest in a process patent shall be considered as unprofessional. The written code seems to have a stronger moral influence than the unwritten code. Also, that a united effort should be made to get a legislative enactment against dental and medical process patents.

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### THE ETHICAL RELATIONS OF PATENT RIGHT AND COPYRIGHT MONOPOLIES

"Because of the nature and importance of their office, practitioners of medicine in any of its branches have always looked with disfavor upon measures restrictive of the free utilization in the service of humanity of any agency directly or indirectly remedial in its character. Hence professional sentiment, as formulated in ethical codes, unreservedly condemns the physician or surgeon who fails to place freely at the disposal of his brother practitioners any process, method, or agency he may have found useful in the treatment of human disease.

"The essential basis of this sentiment is that health and life are too precious to be put at hazard in the interest of selfishness or cupidity, and that a member of the profession whose mission it is to heal cannot be held guiltless if, inspired by such motives, he fails to minister to diseases which he has the means to cure, or allows a death which by his withheld knowledge might have been averted.

"That this ethical principle should apply to dentistry as well as to general medicine can hardly be questioned. . . .

"It is true that monopolies secured by letters patent on instruments and mechanical appliances, which enter so largely into the equipment of the dental practitioner, are not, as a rule, regarded with the same degree of disfavor as are process monopolies. Indeed, there is much to justify the placing of the first-named class of patents in the same category with copyright monopolies.

"Between the two there is, however, the obvious distinction that while the patent right so protects the inventor that his ideas embodied in a mechanism or expressed in his description of a process cannot be used by others without the payment of a royalty, the copyright merely so protects the author that his printed presentation of certain ideas cannot be verbally reproduced and circulated in printed form without vio-

lation of the copyright. The patent monopolizes the utilization of ideas and inventions; the copyright monopolizes the verbal form in which they may be expressed or described.

"As applied to mechanical inventions in dentistry or to dental or medical text books neither the patent right nor the copyright, although both are unquestionably monopolistic, can be regarded as unmixed evils, and, indeed, under the conditions which obtain in modern commercial life each may be regarded as necessary; the one to the development and utilization of inventions and the other to the wide and effective dissemination of professional literature. . . .

"Patents on dental mechanisms or copyrights on dental text books may not me strictly ethical or altogether altruistic, but from the standpoint of the manufacturer and publisher they are business necessities, and without them invention would cease to flourish and of the making of books there would be an end.

"These facts, however obvious as applied to monopolies on books and mechanical inventions, have no bearing upon patents on processes for the treatment of disease, and the hope expressed on page 66 of this issue, in the resolutions recently adopted by the Pennsylvania Association of Dental Surgeons, the oldest dental society in the world, that all processes for relieving human sufferings may by legislative action be declared unpatentable, is one which will meet with a sympathetic response from every generous mind."—*Dental Brief*.

## CAST GOLD INLAYS

J. G. LANE, D.D.S., PHILADELPHIA, PA.

. . . We would prefer an air machine, one that forces the gold into the mould by means of compressed air or compressed gas. By this arrangement the force used can be accurately measured and determined at all times. This adds to the certainty of results, which feature is one of utmost importance. It should not be necessary to have to make two or three patterns of a given case while we have the patient present in order that we might from the lot succeed in getting one casting. The moulding machines and wet asbestos machines are doing excellent work, but with these machines the ability to produce the right amount of pressure to make a casting with sharp edges, and not crack or force the investing material in doing so, is purely an acquired tactile sense. When this has been schooled into the hand of the operator, all is well. The centrifugal machines are also doing good work, but there is present with them an element of guesswork in causing the machine to attain the proper peripheral speed for doing work. There is not a very wide margin between too little and too much pressure.



Too little pressure means a casting with imperfect corners and margins, and too much means a split or distorted mould, and therefore an imperfect casting. The minimum pressure is determined by the resistance met with in changing the gold from its spheroidal form to such form as the mould in the investment may have, and also the resistance met in forcing it through the sprue. The maximum is limited by the strength of the investment. Approximately 15 and 30 pounds respectively are the maximum and minimum. The minimum is also influenced by the shape or complexity of the mould and the safe maximum pressure is determined by the merit of the investment.

Much difficulty has been encountered in obtaining a suitable investment material.

. . . There are certain fundamental requisites that an investment must possess. It should neither permanently expand nor contract under intense heat to which it is subjected; it should set moderately rapid, so that in emergency cases long delays would be avoided, but not so rapidly that its manipulation would be uncertain. It should be so fine grained that a smooth surface would be imparted to the gold, and on that smooth surface no residue remain that would be difficult to remove; last of all it should be inexpensive. After having tried practically all of the various investment compounds that were on the market, and finding all to be more or less experimental and not entirely satisfactory, we began a series of experiments with a view of determining, if possible, whether this condition of things could not be improved. The material used in these experiments were plaster, chalk, asbestos, silex, fire-brick and pumice. All of these materials were, of course, powdered to a fineness suitable for the work.

We proved to our entire satisfaction that asbestos was not a suitable ingredient for an investment. There seemed to be a gas arise from the heated asbestos, and this militated against the introduction of the gold to such an extent that round corners were obtained. This peculiarity was present with every attempt at casting in a mould that had asbestos present in any proportion with any of the other ingredients. We also found that pumice was not a suitable material, because an investment that contained it lacked strength and seemed to be porous or granular to the extent of allowing gold to actually take the form of the granules in the surface that was thus presented, and a rough surface on the casting was the result. With finely-powdered fire-brick as an ingredient, we had results that were good, bad and indifferent. We could not possibly determine just why this material did not seem to work uniformly or would not be more reliable. Chalk in an investment was a sure signal for that investment to contract under high heat. Of course plaster of Paris was present in varying quantities in all the



trials. An investment of plaster and sillex, equal parts, seemed to be perfectly reliable, except for one condition, and that is, it contracted so much in burning out the wax pattern that it no longer fitted the flask, and when pressure was applied in casting the investment was very likely to split. The surface produced on the casting seemed to be as fine as could be desired. We then tried plaster 1, sillex 2. This had all other good points and contraction materially reduced. Tried 1 to 3; results excellent, no contraction.

I would add that in proof of this latter statement many of you noted, during the little experiment we had this forenoon, and also yesterday when the flask was heated, I could take the flask up and hold it. I picked it up and shook it, showing it actually fitted in the flask. I merely mention that as proof of the statement that a mixture of this kind will not permanently contract under heat.

We tried 1 to 4. This did not possess sufficient strength to retain its shape under the necessary pressure. There seems to be a line of demarcation. We, therefore, determine to our entire satisfaction that an investment material composed of one part by weight of plaster and three parts by weight of sillex was greatly superior to any on the market. A most excellent feature is that no pickling is necessary to clean the castings made in it. Since then a mixture of plaster 2 and sillex 3 has been regularly placed on the market. It is at present, so far as we know, the best commercial investment, but contracts enough to make its use uncertain.

It is rather an easy matter to mistake extreme expansion of the flask for contraction of the investment. When heated the flask takes the heat more readily than the investment in it. The flask being a good conductor, and the investment a poor one allows this condition. Thus in the earlier stages of heating to burn out the wax pattern, a good investment might show what would seem to be a contraction by showing a space between it and the flask. A brass flask expands very much when heated, and an investment should expand just as much with an equal increment of heat; but as has been stated, during the heating process the flask becomes much hotter than the investment, and is likely to show a line of space. If, however, the source of heat be removed for from twenty to thirty seconds, allowing the two to even up their different temperatures, the investment should fit tightly in the flask. It is not necessary to have a flask so exceedingly hot while casting, *excepting there should be present in that flask porcelain teeth or pieces of gold or platinum that are intended to be picked up by casting.* The presence of the former requires a high heat to prevent checking, and in the latter case a homogeneous union is not effected except at high pressure.

We do not consider it a good practice to cast against porcelain unless there is no other convenient means of making the union. The only particular feature to be observed in casting against porcelain is that the flask and porcelain shall have a temperature almost as high as the molten gold at the moment of casting. This is to prevent any sudden change of temperature in the porcelain. But there is always a possibility of checking the tooth, regardless of the merits of the apparatus or dexterity in its manipulation.

Present dentistry is trying to get away from the necessity of heating porcelain. The backings for Steele's interchangeable facings can be set in position in the wax, and picked up nicely in the casting, and the facings thus put on without heating. Or if ordinary long-pin facings are being used, and the facings and pins have been oiled, they may be removed from the wax pattern and the pinholes cored in the casting by inserting cores of graphite into the holes in the wax. The facings would be cemented on after the gold foundation had no further need of being heated.

I would add that little cores for that purpose may be easily procured from the delicate little pencils that ladies use at dancing parties. Throw one of these in water and let it remain some time until the glue has let go and the piece of carbon comes out, and you will find that little carbon rod is about the right size to use for cores. Snip off pieces of the proper length to place in the wax, projecting far enough, and after the casting is made the graphite core is driven out and the hole is thus made.

For ordinary inlay work we prefer 24-carat gold. The only arguments that could be advanced against its use are its malleability and increased expense. The latter condition means nothing, because our patients must take care of that. The "too soft" masticating surface that might seem to be brought about by the former condition will not be too soft at all if it is properly finished. We will refer to this later. This same physical condition (namely, malleability) of pure gold gives us a most valuable adjunct toward the protection of the cement line on account of the ability to burnish the margin of the inlay. Occasionally, of course, under certain conditions, or where its use seems to be indicated, we would use an alloy of gold to get a harder surface, or if the inlay was to be used as a bridge anchorage. But such cases are exceptional. We do not sanction the use of "scrap gold" in any casting operation. *Gold that has lost its identity is in no way suitable for any part of this work.* We cannot be sure of proper results unless we know all the while exactly what we are doing.

We prefer to use the oxy-hydrogen blowpipe, not as a necessity, but as a greater convenience toward facilitating the work, and in order

that it may be a means of general utility it should be a hand blowpipe, and in no way connected with a machine.

A smoother casting is obtained if the investment has been allowed to remain some hours, or even days, before heat is applied. Casting can be accomplished in thirty minutes from the time the pattern is flaked, but the resultant casting will not be nearly so smooth and perfect as if its investment had been allowed some hours to harden. It should be allowed to remain until no free water can be driven off in heating it. If water is driven off in heating, this carries away in solution some of the non-soluble salts of crystallization, and the proportion of our investment, as a whole, is changed and weakened. Its surface is liable to undergo a slight disintegration when the melted gold is pressed against it. It therefore follows that when an exceptionally fine casting is desired additional time must be given. . . .

In deciding whether the use of a gold filling or a gold inlay is indicated, there are certain factors that must be taken into consideration. Briefly considered, we would say that if the cavity is large or in poor tooth structure, or in the tooth of a very young patient, or in such position or so inaccessible as to make the possibility of a perfect foil operation at the cervical margin improbable, an inlay is best. It must not be supposed that the gold inlay will take precedence over the porcelain inlay where the use of the latter is indicated for esthetic reasons. Granting that a porcelain inlay never fits as a gold one, it still retains its favor wherever conspicuous. . . .—*Pacific Dental Gazette*.

### SOME INTERESTING INFORMATION AS TO THE CONTRACTION OF GOLD DURING CASTING

UNDER the heading "The Detailed Technic for Making Dental Restoration on Artificial Stone Models," Dr. Weston A. Price, Cleveland, contributes to the *Items of Interest* some interesting and valuable information concerning the shrinkage of gold following casting. An understanding of what Dr. Price writes may aid inlay workers to overcome some of the difficulties now confronting them.—Editor.

. . . When pure gold is melted and allowed to cool, either rapidly or slowly, without pressure, it will contract 22.5 thousandths of its diameter in all directions, which is two and two-tenths per cent. The alloys of gold which we use contract nearly the same extent.

*Second.* This contraction is the most rapid near the melting or freezing point. . . .

*Fourth.* The total contraction of a definite part of a cooling mass of any metal or alloy can be materially and definitely lessened by the application of pressure to another part of the same cooling mass. This

causes most of the contraction to occur in one place where not objectionable. As the contraction takes place the mass is moved by the pressure at a certain point to replace the shrinkage taking place elsewhere, but this can only occur so long as the pressure is greater than the resisting strength of the mass. By this means we can with one-fiftieth of an ounce actual pressure reduce the total contraction in a part of a mass of pure gold from 22.5 thousandths to 20.5 thousandths, and with one-tenth ounce reduce it to 18 thousandths. With three pounds we may reduce it to 14 thousandths, and with five and a half pounds to 13 thousandths. *Remember that the actual pressure is not represented by the surface pressure per square inch of a gas pressing upon it.* For the further discussion of the technical and physical phase of the subject, see article in the May and June numbers of the *Items of Interest* by the writer.

Neither the shrinkage of fourteen thousandths nor the total of 22.5 thousandths will be very noticeable to the ordinary observer if the restoration is to fill a small inside dimension, with a nearly round plug, as an occlusal inlay; but if it is to fit an outside dimension, as around a root or tooth, and is a strong metal that will not stretch, it will be very noticeable, for it will not go on without enlarging. All who have cast bases for porcelain teeth and cap abutments for roots know this, and it is because pure gold will stretch easily that they prefer it for that purpose.

The other methods for correcting this contraction are by modifying the alloy to have a minimum contraction (in which little has yet been done, but no doubt will be), and by either enlarging the mould so that the cast will be the correct size when contracted, or by holding the metal, compelling it to stretch when cooling, or both. The former can be accomplished by expanding a mould into which the cast will be made, and the latter only where the metal can be confined over a very strong form, as a ring around a very hard core. . . .

A centrifugal casting machine, revolving five times per second in a circle of a diameter of ten inches, and with one-half ounce of molten gold, produces an actual pressure of almost one-half pound in the mould, one-eighth inch cross section situated at end of gate; at ten times per second, 2.14 pounds, and at twenty times per second, 8.56 pounds. An air or gas pressure casting machine, with sixteen pounds pressure per square inch on the sprue, produces something less than one-quarter of a pound pressure in a mould one-eighth in cross section, situated at the end of the sprue or gate; at thirty-two pounds pressure, about one-half pound, and at sixty-four pounds pressure, about one pound, not allowing for leakage of pressure past metal.

### *Effects of Contraction*

The percentage of contraction it will be of advantage to correct depends upon the size of the piece and where it is to go. A simple occlusal cavity with tapering walls and rounded margins over which a blunt knife-edge of gold extends, can have the inlay cast with its full 22-thousandths contraction or much more and do no harm, for by grinding the seat a little it only goes in the cavity enough farther to make an apparently perfect adaptation. *If, however, the restoration is a mesial and distal filling, united into one piece through the occlusal surface, the contraction will prevent its going to place,* and to force it means simply to spread it out at the gingival margins, like spreading a horseshoe. It cannot be corrected by grinding, for that would require grinding not only the surfaces making contact with the pulpal walls, but all the margins of both the mesial and distal cavities. . . .

In bridge work, because of the length of the piece, the cooling contraction not only makes the piece too short to meet the abutments, thereby throwing one of them out of register, but, if the attachment encloses the foundation as a ferrule for a root, its decreased diameter will not allow it to go over. The bridge will also be too short at the surface making contact with the gum tissue. For this reason it has been necessary to assemble bridges in section. . . .

### **PORCELAIN AND GOLD INLAY DIGESTS**

MANY dentists are under the impression that the advent of the gold inlay has relegated the porcelain inlay to the limbo of things that are past. With some dentists this is probably true, but with those dentists who were using porcelain inlays judiciously and skilfully, it is not true. Porcelain inlays are indicated under certain conditions, and gold inlays under certain other and quite different conditions.

Do not give up porcelain simply because gold inlays have come. If you have learned to make proper porcelain inlay cavities, your inlays will "stay put." In locations where esthetics are important and only moderate stress is sustained, porcelain can be made to yield excellent results. When esthetics are less important, say from the cuspids back, gold is indicated. Learn to choose wisely and to use each form of inlay according to the indications.

### **WHAT IS THE LEGITIMATE FIELD FOR PORCELAIN INLAYS, AS SHOWN BY OUR PAST EXPERIENCE WITH THEM?**

DR. DAVID A. HARE

If we view the records of porcelain experts for the last fifteen or twenty years we get an answer to that question. I particularly refer

you to the article of Dr. Capon in a current issue of *The Dental Cosmos*. In this article he gives a review of his work for over eighteen years in the use of porcelain, and I am quite sure this record will convince the most skeptical that porcelain has its field in dentistry, and a prominent place at that. When we try to outline the legitimate field for porcelain, we must consider the personal skill of the operator. I do not know of any branch of dentistry where the personal equation enters as largely as it does in porcelain work. It is just as unreasonable for us to expect that the average individual, who knows how to mix porcelain bodies, will produce artistic and beautiful results, as it is to suppose that the average person who can mix colors will produce a beautiful picture. There are cavities in the teeth where possibly one man will say that he cannot preserve the tooth with a porcelain inlay, while another man would get perfect results. For that reason it is almost impossible to lay down a hard and fast rule as to where porcelain should be used and where it should not be used. And it is also unjust and inconsistent for a man who cannot get good results from the use of porcelain, to condemn the whole system on that account. I do not think he is rendering his patient as good service by recommending some other material when porcelain is clearly indicated for certain cases. A conservative statement as to the legitimate field for porcelain would be, that where it is used with discretion and proper manipulation, it can be employed in almost all cavities in the anterior part of the mouth, except in those end-to-end bites where the force of mastication will swage over the gold of even a foil filling.

One thing to be considered with reference to the use of porcelain, is that the dentist has to feel his way along. He has to find out by personal experience with porcelain what he can do with it. No man can lay down a rule for all cases. However, with the modern technic in the preparation of cavities, and the modern facilities we have in the way of improved bodies, we ought to get far better results in the future with porcelain than we have had in the past.

As far as permanency of the filling is concerned, I can say from my own experience that some of the most lasting and beautiful results I have ever obtained have been from large contour fillings in the anterior part of the mouth. Of course, there have been failures, and many of them, but there is always a reason for every failure, and if we stop to learn the lesson from those failures, I am sure it will spur us on to greater endeavor to overcome those difficulties in the future. One of the chief things to be considered in this connection is the occlusion of the teeth, and one of the best methods of ascertaining the degree of stress is blue copying paper, suggested by Dr. Taggart some time ago. It is a most useful article for that purpose, not only in porcelain work, but for other branches of operative dentistry.—*Review*.



BY DR. WILLIAM H. TAGGART

As to the question, "What is the best filling to save teeth?" I would say cement, if it can be protected. Is there a man in this hall who has ever seen or known of decay taking place under cement? I think you will say no. In other words, there is a chemical union. There is a cementation, a stopping of capillary attraction there which prevents decay from taking place under a cement filling. If the cement can be protected, as it can be by the modern inlay, then that is the best filling that can be put in a tooth.

Why is it that this inlay is being taken up, not by the best doctors in dentistry, but by the best mechanics? Simply for the reason that they see the perfection that the inlay process is going to bring about.

Some forty years ago Dr. J. Foster Flagg, of Philadelphia, made the statement that "in proportion as a tooth needed filling, gold was the poorest thing to put into it." He meant that where a tooth was badly decayed, it was in the very poorest condition for a gold filling, because it would be beyond the ability of any man to put gold into such a cavity, whereas he could put amalgam into the same tooth; so that in proportion as a tooth needs filling, according to Dr. Flagg, gold is the poorest filling material to put into it.

Dr. Flagg told the truth at that time, because he could fill those teeth with amalgam, and could not fill them with gold.

I am going to make an assertion to-night which, I think, will go down with just as much force as the statement made by Dr. Flagg; namely, that in proportion as a tooth needs filling, gold is the best thing to put into it, and gold in the form of an inlay.

Such cavities can be filled to-day successfully, and the margins that are away down out of sight can be filled with gold with a cement lining under it. The gold inlay, to my mind, is the ideal filling for a tooth.

Dr. Tenney alludes in a facetious way to the foolishness and temerity of any man who will stand up to-day and advocate porcelain. He scouts the idea. He fails to recognize the very saving quality of the cement underneath, and to-day is just as good a time to use porcelain as ever, if you use it with judgment. It has its place. And there will not come a time when it will be supplanted. . . . They say in an inlay the cement is the weak point. Gentlemen, cement is the strong point of an inlay. An inlay by itself could never save a tooth if it were not for the cement underneath it.

With a cemented filling capillary attraction ceases to be in evidence, because the union is very close on account of cementation. Cement, therefore, under a filling of any kind, is a saving.—*Review.*



## A FEW PRINCIPLES IN RELATION TO COLORS AND THEIR APPLICATION TO PORCELAIN INLAY WORK

By W. L. FICKES, D.D.S., PITTSBURG, PA.

*Importance of skill in the perception of gradations of hues and tones of color.*

The ability to imitate the various hues and tones of a tooth depends as much upon our susceptibility to the various gradations of color as upon our skill in the manipulation of materials.

Color is distinguished as possessing three attributes; namely, purity, hue, and luminosity. The purity of the color of a natural object is the proportion of white light to that of colored light emitted from it. The luminosity of a color relates to its brightness. A color is at its greatest intensity when it is at its greatest purity and of considerable luminosity. An excess of reflected light, however, would have a tendency to detract from the intensity of hue.

\* \* \*

It is only the delicate tints of color that we find in the teeth, and in order to imitate them it is necessary first to be able to distinguish them. The slightest variation in hue or tone can be noted by the expert operator, and upon this depends, to a considerable extent, his ability to overcome color problems. It is, therefore, imperative for inlay workers to observe and study colors, and the various influences which modify their purity, hue and luminosity.

### THE LAYER METHODS COMPARED WITH OTHER METHODS

The majority of porcelain operators are using the layer method introduced by Dr. Reeves, in preference to other methods for the application of the body. There are reasons why the layer method is to be preferred. Porcelain bodies are all more or less translucent, and every layer of body, in succession, is influenced by the adjacent layers. The degree of modification is principally dependent upon the thickness of each successive layer, upon its position in the inlay, upon the degree of translucency of the body; upon the hues and tones of the color, and upon the intensity of the colors. These are all guides to the final result. The varying thickness of the layers has an influence on the final color, and a knowledge of that modifying influence is more easily acquired because we have the measurement of thickness as well as color to guide us.

We get purer colors by the layer method, and the modifications in color are more easily understood. The direct mixture of the bodies produces a greater percentage of black than would result from the use

of the layer method. Light tints may easily be deepened by mixing, but dark tones cannot be made much lighter. The raising or lowering of the tone is more readily controlled by baking in layers. The final color is produced by successive steps, and it is possible thus to make modifications at any stage up to the final layer.

The porcelain worker should experiment by making many combinations of colored bodies on layers of varying thickness and of mixtures. These combinations should be of varying intensities of hue and tone. Misgivings and doubts will soon disappear, and the operators will gradually work with greater confidence and skill. . . .

The local color, or that which is dependent upon the nature of an object, is more constant if the surface of the object is rough than it would be if it were polished or glazed. *Therefore an inlay should be fired until it is just short of a full glaze.* A slightly uneven surface as well as the full strength of the porcelain can be developed by firing for a longer time, at a lower temperature, than would be required for developing a perfectly smooth, glassy surface. It should be glazed and yet have minute conical elevations. These elevations on the surface of the porcelain reflect the light in all directions; hence, the local color is not so greatly influenced by changes of position in relation to the source of light, by changes in the relative positions of the inlay and the observer, or by modifications in the source of light, as it would be were the surface polished or glazed.

*Effect of light or exclusion of light on the color of a porcelain inlay in respect to tone.*

. . . An inlay which is to be placed in a position where the light is unobstructed should be made slightly darker in tone than one which is to be placed in a less exposed position.

#### CEMENTS AND THEIR MODIFYING INFLUENCES ON INLAYS

The modifications in the color of an inlay after it has been cemented to place have generally been attributed to the effect of the shadow of the cement. This is misleading, if we understand it to mean the ordinary conception of a shadow. It has been said that this shadow would not be present if we could obtain a transparent cement. When light passes through two media which differ in optical density it is refracted. If the cement absorbs a proportion of colored rays, complementary to those absorbed by the tooth and porcelain, a certain proportion of black will be formed; if the cement absorbs a portion of the light rays, there will be a decrease in luminosity; if the cement has the property of transmitting or reflecting considerable white light and colored rays which antagonize the effect of the porcelain colors, there will be a consequent change in the color of the filling.

These are not all the changes which might take place because of the cement, but they are sufficient to demonstrate that the modifications in color are not all due to what is generally understood as "shadow." They also demonstrate the fact that a transparent cement would not necessarily solve the problem. We require a cement that will have the least influence in changing the light rays as they are transmitted through the tooth, and that will cause as little change as possible from reflected rays. It should be of an optical density between that of porcelain and of tooth substance, so that the light rays might be transmitted with as little change as possible. It could be as opaque as the tooth, and yet not interfere with the final result any more than would the tooth itself.

A knowledge of the various modifications caused by the cement can be more easily learned by using as few cement colors as possible. Skill in overcoming the modifying influences of one color of cement is more quickly acquired than if many are used. Cements which differ in chemical constitution or in crystallization also differ in their optical effects. It is, therefore, easier to acquire a knowledge of these effects by using one variety of cement than by using many.—*Dental Cosmos*.

### **CAUSES WHICH MAY RESULT IN AN IMPERFECTLY FITTING INLAY**

By DR. G. WALTER DITTMAR, CHICAGO

IMPERFECT cavity preparation; imperfect impression of cavity in inlay wax; imperfect carving and adapting of the wax inlay to the margins of the cavity; distorting the wax inlay in removing it from the cavity; imperfect investing of the wax inlay; the application of too much heat to the investment while drying, causing the steam to warp or distort the investment; the application of too much heat to the flask and investment while casting, causing expansion to the entire mass; the application of too much force while casting, causing checking of the investment; the use of inferior wax and investing compound; the use of an inferior casting device. These, in my opinion, are the causes for many failures, and not the contraction of the mass of metal in cooling.—*Review*.

### **A GOOD INLAY IN FIFTEEN MINUTES**

A GOLD inlay can be made in fifteen minutes in those cases where no contour is required. For example, a lower right second molar, occlusal cavity, involving the central fossa and the four grooves radiating from it. Prepare the cavity so an impression will draw, not being particular to remove all the decay from the bottom of the cavity before the impression is taken. The decay may be removed after the inlay is

made, and will then provide for retention of the cement in the great majority of cases. Take the impression in a hard, sticky wax held in a small tray. Fill the impression with Price's artificial stone, and immediately place it upside down on a piece of asbestos over a Bunsen flame. As the wax is melted out the stone hardens. A couple of minutes later apply a full blow-pipe flame on the stone, which completes its hardening. Burnish either pure gold or thin platinum into the cavity, and into this pack crystal gold, not too tightly, and then fuse 22k. plate into the crystal gold. It will soak it up as a sponge does water if the stone is well heated from below. The model, inlay, and all may be cooled in water without destroying the model. Now proceed to finish the inlay down to the margins with stones, and polish at the lathe. Split the model with cutting pliers, and the inlay will fall out ready to set. If there is any fear of fusing a pure gold matrix, platinum may be used, and gold and platinum crystals packed into the cavity, and pure gold fused into it. Do not read this over and forget it, but do the first case you meet in the manner described, and then you will always remember it.—*Dominion Dental Journal*.

## A RATIONAL METHOD OF PRODUCING LOCAL ANESTHESIA

BY HERMANN PRINZ, M.D., D.D.S., ST. LOUIS, MO.

(EVERY user of local anesthetics should be familiar with the information in this digest. There is no field of dental practice where knowledge is more essential. To be able to select that drug which has least toxic action and to use it in a solution which is at once efficient and harmless, confers great benefits on both patient and dentist. It is safe to say that had the information here given been in the hands of the profession ten years ago, many an unfortunate happening would have been avoided.—EDITOR.)

### LOCAL ANESTHESIA

Cocain, when injected into the tissues, produces typical local and general effects. Locally, it possesses a definite affinity for the peripheral nerves; it causes constriction of the smaller arteries, producing light anemia in the injected area with diminished action of leucocytes. . . .

If cocain in sufficient quantities is absorbed by the circulation, general manifestations are produced from bringing other tissues in close contact with the poison. The principal disturbances of the central nervous system make themselves known by vertigo, a very slight pulse, enlarged and staring pupils, and a difficult respiration. Vomiting may occur; the throat feels dry. Intense excitement is followed by epilepti-

form spasms; finally, complete loss of sensation and mobility results, which terminates in death from cessation of respiration. The character of the disturbances is closely related to that which occurs in chloroform or ether poisoning. The typical picture of cocain poisoning is produced when the blood flowing through the central nervous system contains a sufficient quantity of the drug, even for a moment only, which is dangerous to this organ. No maximum dose can be positively established. This is equally true of chloroform and ether when used for general anesthetic purposes.

No direct antidotes are known; the treatment of general intoxication is purely symptomatic. Anemia of the brain, which is of little consequence, may be readily overcome by placing the patient in a recumbent position or by complete inversion, if necessary. As a powerful dilator of the peripheral vessels the vapors of amyl nitrite are exceedingly useful; it is best administered by placing three to five drops of the fluid upon a napkin and holding it before the nostrils for inhalation. Flushing of the face and an increase in the frequency of the pulse follows momentarily. For convenience' sake, amyl nitrite may be procured in small glass pearls, holding the necessary quantity for one inhalation. [*Not more than two or three inhalations of amyl nitrite should be permitted. Its first action is to stimulate the circulation. Its secondary action is very depressing. The maximum stimulation from this drug is obtained in three inhalations; after that its action is depressing.—Editor Digest.*] Nausea may be remedied by administering small doses of spirits of peppermint, aromatic spirits of ammonia or validol. The latter is a compound of menthol and valerianic acid and deserves special recommendation. To overcome the disturbances of respiration, quickly institute artificial respiration; it is the alpha and omega of all methods of resuscitation. The only drug that has proved to be of value in this connection is strychnin in the form of sulphate or the nitrite in full doses by means of hypodermic injections.

The relative toxicity of a given quantity of cocain solution depends upon the concentration of the solution. . . . *A fixed quantity of cocain in a 5 per cent. or a 10 per cent. solution is almost equally as poisonous as five times the same quantity in a 1/2 per cent. solution.* From the extensive literature on the subject we are safe in fixing the strength of the solution for dental purposes at 1 per cent. . . .

A suitable solution for dental purposes may be prepared as follows:

|                          |              |
|--------------------------|--------------|
| Cocain hydrochlorid..... | 5 grains.    |
| Sodium chlorid.....      | 4 grains.    |
| Sterile water.....       | 1 fl. ounce. |

To each syringe-ful (30 minims) add two drops of adrenalin chlorid solution when used.

## RECENT SUBSTITUTES FOR COCAIN

Quite a number of substitutes have been placed before the profession for which superiority in one respect or another is claimed over the original cocain. The more prominent members of this group are tropa-cocain, the eucains, acoin, nirvanin, alypin, and stovain and novocain. None of these, with the exception of novocain, has proved satisfactory for the purpose in view. . . . The principal properties of such a chemical must correspond to the following claims: (1) In comparison to its local anesthetic value it must be less toxic than cocain. (2) The chemical must be absolutely indifferent to the tissues when injected in more or less concentrated solutions. The progress of wound healing must not be interfered with by this solution. (3) The chemical must be readily soluble in water; the solution must be comparatively stable, and it should be possible to sterilize it by simple means. (4) The remedy must be tolerant to the addition of adrenalin without interfering with the vaso-constrictor power of the drug. (5) When applied to mucous surfaces ready penetration of the drug is necessary.

Tropa-cocain is less poisonous, but also less active than cocain, it completely destroys the action of adrenalin; the eucains partially destroy the adrenalin action; they are, comparatively speaking, equally as poisonous as cocain; acoin is irritating to the tissues and much more poisonous than cocain; nirvanin possesses little anesthetic value; alypin and stovain are closely related, producing severe pain when injected, which occasionally results in gangrene. . . .

Novocain possesses the same anesthetic power as cocain upon the peripheral nerves. In one-quarter per cent. solution it is sufficiently powerful to anesthetize even large nerves, viz., it is equal in its anesthetic potency to any of the known local anesthetics. . . . Pharmacologists have shown that novocain is about seven times less poisonous as compared to cocain. . . .

As stated above, the relative toxicity of a given quantity of cocain in solution depends upon its concentration; this peculiarity is not shared by novocain. The dose of novocain may be safely fixed at one-third of a grain for a single injection. For dental purposes a two per cent. solution is preferably employed; as much as 3 grains of a two per cent. solution in combination with adrenalin has been injected without any ill results. For the purpose of confining the injected novocain to a given area, the addition of adrenalin in small doses on account of its powerful vaso-constrictor action is admirably adapted. It is the important factor which prevents the ready absorption of both drugs, and consequently largely nullifies the poisonous results. An injection to ten drops of a two per cent. solution of novocain labially



into the tissues produces a diffuse anesthesia lasting approximately twenty minutes; the same quantity with the addition of one drop of adrenalin chlorid solution increases the anesthetic period to over one hour and localizes the effect upon the injected area. In proof, the two solutions may be tinted with methylene blue and then injected into the subcutaneous tissue of the forearm; the colored areas are nicely outlined, and can be tested by needle prickings.

A suitable solution of novocain for dental purposes may be prepared as follows:

|                      |              |
|----------------------|--------------|
| Novocain .....       | 10 grains.   |
| Sodium chlorid.....  | 4 grains.    |
| Distilled water..... | 1 fl. ounce. |
| Boil.                |              |

To each syringeful (30 minims) add two drops of adrenalin chlorid solution when used.

*Ready-made solutions of cocain, and equally so of novocain, will not keep when frequently exposed to the air; they irritate the tissues when injected, and frequently produce inflammatory infiltrations. A perfectly sterile solution may be made extemporaneously by dissolving the necessary amount of novocain-adrenalin in tablet form in a given quantity of boiled distilled water. A suitable tablet may be prepared as follows:*

|                             |               |
|-----------------------------|---------------|
| Novocain .....              | 1-3 grain.    |
| Adrenalin hydrochlorid..... | 1-1500 grain. |
| Sodium chlorid.....         | 1/8th grain.  |

One tablet dissolved in 15 minims of sterile water makes a two per cent. solution of novocain ready for immediate use.—*Dental Era.*

## DOES THE MEDICAL DEGREE ADD TO THE PROFESSIONAL AND SOCIAL STANDING OF THE DENTIST?

GEORGE W. WELD, M.D., D.D.S., NEW YORK CITY

DR. EDWIN T. DARBY, of Philadelphia, read a very interesting and sensible paper on this subject before the First District Dental Society on the evening of October 10, 1908.

It is Shakespeare, if we are not mistaken, who says that "ignorance is the curse of God; *knowledge* the wing wherewith we fly to heaven."

If knowledge is power as claimed, then it may be said, without fear of contradiction, that the medical degree would, at least, add to the professional standing of any dentist. The question from a practical



standpoint is, Does the degree add very much to the qualifications of the dentist to practise his profession? We used to think years ago, when dentistry was in its infancy, that if the medical colleges had created a dental department in each college and had issued diplomas and conferred the degree of M.D. upon all students alike, it might have been a wise proceeding; but it is too late now to think of such a thing. Too much capital has been invested. Our modern dental schools are too well equipped with scientific instruments and backed up with scientific men. The curriculum is so high that any student can learn all that is necessary to learn, and more, for that matter, than is necessary to practise dentistry.

A few years ago the faculty of Harvard Medical School placed a big D. before the title M.D.; it was not a bad idea after all, for Harvard possibly thought in so doing the titles, at least, would be brought a little nearer together. When Harvard did this she paid a great compliment to Chapen A. Harris, for Dr. Harris probably felt in his day that the degree M.D. and the degree D.D.S. represented two distinct and separate professions; and that the M.D. was no more qualified to practise dentistry than the D.D.S. was qualified to practise medicine.

The fact of it is that the degree of D.D.S. has become a power throughout the civilized world, and is recognized by society as being a most useful degree.

We can safely say to all young men and women who are now striving for the degree of D.D.S. that, when acquired, they can rest assured they will hold a professional standing in life that will enable them to alleviate much pain and suffering and benefit their fellowmen quite as much as the average M.D.

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### NATIONAL DENTAL ASSOCIATION

DR. E. S. GAYLORD, New Haven, Conn., asked and was granted the privilege of presenting a communication from Dr. J. Leon Williams, of London, England, entitled "Plea for More Scientific and Esthetic Forms of Artificial Teeth," as follows:

*Gentlemen of the National Dental Association:* You are all doubtless aware of the efforts which I have been making during the past year to secure more scientific and artistic forms of artificial teeth. You have read the published letters of many who have given special attention to this subject, and you have seen that there has not been a single dissentient voice in these utterances. All who have spoken have expressed themselves as heartily in favor of what I have been asking for.

You have also seen that several important societies, including the Odontological Society of France and the St. Louis Dental Society, have

passed resolutions indorsing this movement. But the manufacturers still seem to think that there is not sufficient evidence that the profession as a whole demands these improvements for which we are asking, to warrant the necessary outlay.

I am, therefore, making this appeal to you to take the last step necessary to bring about what we wish. It had for some time been my intention to be present at this meeting and make my appeal in person. Fate has decreed otherwise, but I hope that the eloquence and earnestness of those who are most interested in this proposed reform will be more effective than my voice would have been.

You have heard Dr. Wilson's interesting contribution to one phase of this subject, and I may say at the outset that I indorse nearly every point he has made. Near the opening of his paper he has said, "Orthodontists consider occlusion to be of fundamental importance in their art. Prosthetics should give consideration to this function, but far more attention to that associated function (call it what you may) denoting action." He further says, "If the skilled artisan to his proficiency adds esthetics he becomes an artist, and is entitled to be ranked as a professional man and to receive the emoluments of his profession." Improvements in artificial teeth constitute the first step toward the realization of these ideals. Dr. Wilson rightly places use before esthetics, but as Ruskin so often showed, the two principles, at the highest, are always united. We are, therefore, asking the manufacturer to give us artificial teeth with which a more perfect occlusion may be obtained with less labor than is now necessary, and which in other respects are more closely modeled after the natural teeth, and therefore would be more beautiful, more in harmony, when properly selected, with the other features.

Right here I wish to emphasize what I believe to be an important fact, namely, that there is not a manufacturer who would not be glad to go to the expense of producing a new system of moulds if he felt certain that the profession wanted this work done. One of the largest makers of American artificial teeth is at the present moment in London. He has called on me and expressed himself emphatically in accordance with the above statement.

You see, therefore, that the matter rests entirely with you. If the National Dental Association at this meeting passes a resolution indorsing this movement, and asking that these suggested improvements be carried out, I am confident that results of great value will follow before the next annual meeting.

What is it then, specifically, that we want? In answering this question I will place our demands in what I regard as the order of their importance:

*First.*—Molars and bicuspid which are carefully modeled after the shapes of natural teeth, especially in regard to the occluding surfaces. These occluding surfaces would not be modeled on the teeth of youth, but on the somewhat worn surfaces of middle life.

*Second.*—Incisors carefully modeled after the natural teeth, beginning with the four basal temperamental types and introducing the more characteristic so-called "accidents of nature" as to contour and surface texture and markings.

*Third.*—Better gradation and delicacy of coloring of the teeth.

*Fourth.*—The arrangement of all artificial teeth into a system whereby the difficulties of making the proper selection would be greatly reduced.

Let me elaborate somewhat these four demands, commenting on various points as I proceed. So much has already been written in the way of criticism of the occluding surfaces of bicuspid and molars as at present made, that it would hardly seem necessary to further emphasize this point. I have never seen any attempt to defend these faults of artificial teeth as now made. Why, then, are they continued? Because the profession has never, in its corporate capacity, demanded a reform. Nothing is really easier than to bring this about, and nothing but the most pronounced indifference will prevent its being brought about. Can any intelligent, progressive dentist be found who will take up the position that artificial bicuspid and molars should not be of the same size and shape as the corresponding natural teeth? Nothing of the sort is in existence, and I believe that no manufacturer has any plan or method of working whereby a full set of teeth can be produced so that the upper teeth shall be in proper relationship to the lower. The convex tubercles to be found on the occluding surfaces of all artificial teeth as now made do not correspond to anything in nature. They are largely removed by every skilful dentist in mounting, and this necessitates much labor, which should be made unnecessary.

To illustrate how imperfect incisor teeth as they are now made are, I will relate an experience I have just had. I extracted two loose central incisors, the only teeth remaining in the jaw, and sent them to be matched in artificial teeth. The natural teeth are very beautiful in shape, texture, and color. The falseness of appearance in the best match that could be found in artificial teeth was very striking, and when one came to closely study the natural and artificial tooth side by side, it was easy enough to see and point out the faults in the artificial tooth. All angles and corners in the artificial tooth were rounded off, the effect being mere prettiness, with the loss of the finer beauty of character. The contrast in color between the tip of the tooth and the neck was much more marked in the artificial tooth. All with whom I

have talked or corresponded are agreed that there has been a marked degeneration in the last twenty years in the coloring of teeth. In the artificial tooth to which I have just referred there was a total absence of those delicate surface markings which add so much to naturalness of appearance. I have long noticed that when the manufacturer attempts to imitate any peculiar marking of the natural teeth he grossly exaggerates these markings, and makes them with a mechanical regularity that completely converts the effect into caricature. So far as one can see, no manufacturer has yet employed model-makers with exact knowledge and fine artistic taste. It is folly to pretend otherwise, because the results are before us, and I am inclined to think the majority of dentists do not realize the great possibilities for improvement in this direction. That appears to me to be the real explanation of the seeming indifference. If this work of reform is once started, I think all will be astonished that it should have been delayed so long.

I believe there is also a consensus of opinion that artificial teeth are not as strong now as those were which were made twenty or thirty years ago. There seems to have been a general, all-round degeneration in the work, and several manufacturers frankly admit this. No doubt one reason for this has been the concentration of the profession on so-called operative dentistry, to the great neglect of the prosthetic branch. Is it not true that the prevailing sentiment among the undergraduates in our dental colleges runs in the direction of doing as little prosthetic work as possible? Not long ago I attempted to make use of the services of a young man who has a double qualification from two of the best American and European schools. He was asked to make an upper and lower partial plate for a mouth presenting no unusual difficulties. After spending a week over the case, it ended in a complete failure, and had to be entirely reconstructed. I do not think this instance an exceptional one, and I am convinced that this work of reform in artificial teeth must be educative among dentists as well as with the manufacturers.

I now come to my fourth demand, which is for the arrangement of artificial teeth into a system. I have mentioned this matter several times in recent communications to *Items of Interest*, and it seems hardly necessary to go over the ground completely at this time. Briefly, my claim is that from fifty to seventy-five moulds or models of carefully selected temperamental and racial forms of teeth, of the necessary sizes, arranged in a scientific system, would give us far better resources than all the moulds at present in existence. It should be possible for any intelligent dentist to select the teeth for any given case from shade and model guides in five minutes, and order his teeth with a certainty of getting the best possible effect and result for that

particular patient. Furthermore, if my suggestion is carried out, hundreds of dentists would find it possible to carry a sufficient stock of teeth for general purposes who now find it useless to attempt such a thing, and thus the manufacturer would get an immediate return for his outlay.

I have challenged any manufacturer, or anyone else, to produce a set of artificial teeth which cannot be placed in one of eight or ten groups and show any important differences. If my position is correct, what possible excuse can there be for the present lack of system and for the confusion caused by the great number of moulds which more or less overlap each other. Fewer moulds and better forms is our demand, briefly put.

My suggestion to the present meeting of the National Association is that a resolution be passed asking the manufacturers to give this matter their immediate and serious attention, and that a committee be appointed to go into the entire subject to correspond and confer with those who are able and willing to assist in bringing about the suggested improvements, and also to confer with the manufacturers to this end.

Fraternally yours,

J. LEON WILLIAM [*Dental Cosmos*].

## ARE WE READY FOR NEW MOULDS FOR TEETH?

From a letter in *Items of Interest*, June, 1908

"I HOPE that Dr. Williams's cry for this much-needed reform (in the moulds of artificial teeth \*) will be taken up by the members of our profession, and force the manufacturer to realize that moulds approaching the natural teeth are what we want."

(Signed) N. L. P.

Another letter, same issue:

"At the last meeting of the St. Louis Society of Dental Science a hearty indorsement of the efforts of Dr. J. Leon Williams to improve the forms of artificial teeth was voted, and he has been so informed."

(Signed) C. O. S.

There is much that is excellent in the agitation for new moulds of artificial teeth, especially in the occlusal surfaces of bicuspid and molars.

This agitation, however, overlooks one important consideration. It is, that very few of us make intelligent selections among the moulds

\*Parenthesis ours.—EDITOR.

we now have. Such unscientific selections are not the fault of the manufacturer; they lie wholly with the dentist, and they are directly traceable to lack of definite knowledge on the part of the dentist. Until the average of knowledge in this particular line is increased, new moulds, however perfect, will be of but little value.

What is the first consideration in selecting artificial teeth? Is it not size?

Yet how many dentists can tell just the size of the teeth indicated for a given full upper? How many dentists know what steps to take to find out the required sizes? How many of those dentists who are most intelligent and painstaking select teeth by trying them on the model? Yet this is a crude method and full of shortcomings. Teeth for full dentures can be selected intelligently only from the bite; not from the model.

We need new moulds—true, but we need first and more to learn to select teeth intelligently. We shall then find that many of the present moulds are better than we thought. And when the new moulds come, we shall be ready to use them intelligently.

But unless we learn to select teeth with discretion, the new moulds also may fail at our hands. And the fault will not be with the moulds; it will be with *us*.

## DIGESTS OF ARTICLES WE OUGHT ALL TO KNOW ABOUT

THERE frequently appear in magazines articles with which we should be familiar. Sometimes they relate very closely to dentistry, as in "Treasure of the Body," a digest of which follows. Sometimes their connection with our profession is more distant, yet very real, as in "The Solving of the Milk Problem." Sometimes they pertain to our interest in the community, as in "The Real Self and Drugs." This department will present monthly digests of such articles gathered from widely scattered sources; it will serve as your reader for many magazines, and will give you the gist of the matters in condensed form.

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### TREASON IN THE BODY

BY WOODS HUTCHINSON, A.M., M.D.

(EVERY dentist should be familiar with the facts in this article. As here shown, cancer has a direct relation to the loss of teeth and the condition of the remaining teeth. Not only this, but cases present which we should be able to diagnose as to their probable nature. Diagnostic and prognostic information of great value is here given.—EDITOR.)

The imagination of the race has ever endowed cancer with a peculiar individuality of its own.

Its very name is instinct and bristling with this idea: *Krebs*, in German; *Cancer*, in Latin, French and English; *Carcinoma*, in Greek, all alike mean "Crab," a ghastly, flesh-eating parasite, gnawing its way into the body. The simile is sufficiently obvious. The hard mass is the body of the beast; the pain of the growth is due to his bite; the hard ridges of scar-tissue which radiate in all directions into the surrounding skin are his claws.

The singular thing is that, while brushing aside, of course, all these grotesque similes, the most advanced researches of science are developing more and more clearly the conception of the independent individuality—as they term it, the *autonomy*—of cancer.

More and more decidedly are they drifting toward the unwelcome conclusion that in cancer we have to deal with a process of revolt of a part of the body against the remainder, "a rebellion of the cells," as an eminent surgeon-philosopher terms it.

#### THE WORLD-RIDDLE OF PATHOLOGY

The world-riddle of pathology the past twenty years has been: Is cancer due to the invasion of a parasite, a veritable microscopic "crab,"



or is it due to influences in the communal relations, or, to speak metaphorically, the allegiance of the cells? Disappointing as it may be, the balance of proof and the opinion of the most experienced and broadest-minded experts is against the parasitic theory, so far, and becoming more decidedly so. In other words, cancer appears to be an evil which the body breeds within itself.

#### HOW THE INSURRECTION BEGINS

The nature of the process is a revolt of a group of cells. The cause of it is legion, for it embraces any influence which may detach the cell from its normal surroundings—"isolate it," as one pathologist expresses it. The cure is early and complete amputation of not only the rebellious cells, but of the entire organ or region in which they occur.

. . . The process begins in one great class of cells, the epithelium of the secreting glands. This is a group of cell-citizens of the highest rank, descended originally from the great primitive skin-sheet, which have formed themselves into chemical laboratories, ferment-factories for the production of the various secretions required by the body, from the simplest watery mucus, as in the mouth, or the mere lubricant, as in the fat-glands of the hair-follicles, to the most complex gastric or pancreatic juice. They form one of the most active and important groups in the body, and their revolt is dangerous in proportion.

The movement of the process is usually somewhat upon this order: After forty, fifty, or even sixty years of loyal service the cells lining one of the tubules of a gland—for instance, of the lip, or tongue, or stomach—begin to grow and increase in number. Soon they block up the gland-tube, then begin to push out in the form of finger or root-like columns of cells into the surrounding tissues.

These columns appear to have the curious power of either turning their natural digestive ferments against the surrounding tissues, or of secreting new ferments for the purpose, closely resembling pepsin, and thus literally eating their way into them. So rapidly do these cells continue to breed and grow and spread resistlessly in every direction that soon the entire gland, and next the neighboring tissues, become packed and swollen, so that a hard lump is formed, the pressure upon the nerve trunks gives rise to shooting pains, and the first act of the drama is complete.

But these new columns and masses, like most other results of such rapid cell-breeding in the body, are literally a mushroom growth. Scarcely are they formed than they begin to break down, with various results. If they lie near a surface, either external or internal, they crumble under the slightest pressure or irritation, and an ulcer is formed, which may either spread slowly over the surface from the size

of a shilling to that of a dinner-plate, or deepen so rapidly as to destroy the entire organ, or perforate a blood-vessel and cause death by hemorrhage. The cancer is breaking down in its center, while it continues to grow and spread at its edge. Truly a "magnificent scheme of decay."

Then comes the last and strangest act of this weird tragedy. In the course of the resistless onward march of these rebel cell-columns some of their skirmishers push through a wall of a lymph channel, or even, by some rare chance, a vein, and are swept away by the stream. Surely now the regular leucocyte cavalry have them at their mercy, and can cut them down at leisure. We little realize the fiendish resourcefulness of the cancer cell. One such adrift in the body is like a ferret in a rabbit warren; no other cell can face it for an instant. It simply floats unmolested along the lymph channels until its progress is arrested in some way, when it promptly settles down wherever it may happen to have landed, begins to multiply and push out columns in every direction, into and at the expense of the surrounding tissues, and behold, a new cancer, or "secondary nodule," is born (*metastasis*).

In fact, it is a genuine "animal spore," or seed cell, capable of taking root and reproducing its kind in any favorable soil. And, unfortunately, almost every inch of a cancer patient's body seems to be such. It is merely a question of where the spore cells happen to drift and lodge. The lymph nodes or "settling basins" of the drainage area of the primary cancer are the first to become infected, probably in an attempt to check the invaders; but the spores soon force their way past them toward the central citadels of the body, and, one after another, the great, vital organs—the liver, the lungs, the spleen, the brain—are riddled by the deadly columns and choked by decaying masses of new cells, until the functions of one of them are so seriously interfered with that death results.

#### THE DIFFERENCE BETWEEN CANCER AND INFECTION

Obviously, this is a totally different process, not merely in degree, but in kind, from anything that takes place as a result of the invasion of the body by an infectious germ or parasite of any sort. There is a certain delusive similarity between the cancer process and an infection. But the more closely and carefully this similarity is examined the more superficial and unreal does it become. The invading germ may multiply chiefly at one point or focus, like cancer, and from this spread throughout the body and form new foci, and may even produce swarms of masses of cells resembling tumors, as, for instance, in tuberculosis and syphilis. But here the analogy ends.

The great fundamental difference between cancer and any infection lies in the fact that, in an infection, the inflammations and poisonings

and local swellings are due solely and invariably to the presence and multiplication of the invading germs, which may be recovered in millions from every organ and region affected, while swellings or new masses produced are merely the outpouring of the body cells in an attempt to attack and overwhelm these invaders. In cancer, on the contrary, the destroying organism is a group of perverted body cells. The invasion of other parts of the body is carried out by transference of their bastard and abortive offspring. Most significant of all, the new growths and swellings that are formed in other parts of the body are composed not of the outpourings of the local tissues, but of *the descendants of these pirate cells*. This is one of the most singular and incredible things about the cancer process: that a cancer starting, say, in the pancreas, and spreading to the brain, will there pile up a mass—not of brain cells, or even of connective tissue cells—but of gland cells, resembling crudely the organ in which it was born. So far will this resemblance go that a secondary cancer of the pancreas found in the lung will yield on analysis large amounts of trypsin, the digestive ferment of the pancreas. Similarly, a cancer of the rectum, invading the liver, will there pile up in the midst of the liver tissue abortive attempts at building up glands of intestinal mucous membrane.

This fundamental and vital difference between the two processes is further illustrated by this fact: While an ordinary infection may be transferred from one individual to another, not merely of the same species, but of half a dozen different species, with perfect certainty, and for any number of successive generations; no case of cancer has ever yet been known to be transferred from one human being to another. In other words, the cancer cell appears utterly unable to live in any other body except the one in which it originated.

So confident have surgeons and pathologists become of this that a score of instances are on record where physicians and pathologists, among them the famous surgeon-pathologist, Senn, of Chicago, only a few years ago, have voluntarily ingrafted portions of cancerous tissue from patients into their own arms, with absolutely no resulting growth. In fact, the cancer cell behaves like every other cell of the normal body, in that, though portions of it can be grafted into appropriate places in the bodies of other human beings and live for a period of days, or even months, they ultimately are completely absorbed and disappear. The only apparent exception is the epithelium of the skin, which can be used in grafting or skinning over a wide raw surface in another individual. However, even here the probability appears to be that the taking root of the foreign cells is only temporary, and makes a preliminary covering or protection for the surface until the patient's own skin cells can multiply fast and far enough to take its place . . .

So we may absolutely disabuse our minds of the fear which some of our enthusiastic believers in the parasitic theory of cancer have done much to foster—that there is any danger of cancer “spreading,” like an infectious disease. Disastrous and gruesome as are the conditions produced by this disease, they are absolutely free from danger to those living with or caring for the unfortunate victim. . . .

This conclusion is further supported by the disappointing result of the magnificent crusade of research for the discovery of the cancer “parasite,” whether vegetable or animal, which has been pursued with a splendid enthusiasm, industry and ability by the best blood and brains of the pathological world for twenty years past. . . .

Scores, yes, hundreds, of different organisms have been discovered in and about cancerous growths, and announced by the proud discoverer as the cause of cancer. Not one of these, however, has stood the test of being able to produce a similar growth by inoculation into another body; and all which have been deemed worthy of a test-research by other investigators besides the paternal one have been found to be mere accidental contaminations, and present in a score of other diseases, or even in normal conditions. . . .

This is not by any means to say that there is no causative organism, and that this will not some day be discovered. Human knowledge is a blind and short-sighted thing at best, and it may be that some invading cell, which, from its very similarity to the body cells, has escaped our search, will one day be discovered. Nor will the investigators diminish one whit of their vigor and enthusiasm on account of their failure thus far.

The most strikingly suggestive proof of the native-born character of cancer comes from two of its biologic characters. The first is that its habit of beginning with a mass formation, rapidly deploying into columns and driving its way into the tissues in a ghastly flying wedge, is simply a perfect imitation and repetition of the method by which glands are formed during the development of the body. The flat, or epithelial, cells of the lining of the stomach, for instance, begin to pile up in a little swarm, or mass, elongate into a column, push their way down into the deeper tissue, and then hollow out in their interior to form a tubular gland. The only thing that cancer lacks is the last step of forming a tube, and thereby becoming a servant of the body instead of a parasite upon it.

Nor is this process confined to our embryonic or prenatal existence. Take any gland which has cause to increase in size during adult life, as, for instance, the *mammary gland*, in preparation for lactation, and you will find massing columns and nests of cells pushing out into the surrounding tissue in all directions, in a way that is absolutely undis-

tinguishable in its earlier stages from the formation of cancer. It is a fact of gruesome significance that the two organs—the mammary gland and the uterus—in which this process habitually takes place in adult life are the two most fatally liable to the attack of cancer.

Another biologic character is even more striking and significant. A couple of years ago it was discovered by Murray and Bashford, of the English Imperial Cancer Research Commission, that the cells of cancer, in their swift and irregular reproduction, showed an unexpected peculiarity. In the simplest form of reproduction, one cell cutting itself in two to make two new ones, known as mitosis, the change begins in the nucleus, or kernel. This kernel splits itself up into a series of threads or loops, known as the chromosomes, half of which go into each of the daughter cells. When, however, sex is born and a male germ cell unites with a female germ cell to form a new organism, each cell proceeds, as the first step in the process, to get rid of half of these chromosomes, so that the new organism has precisely the normal number of chromosomes, half of which are derived from the father and the other half from the mother germ cell. This, by the way, is the mechanical basis of heredity.

It has been long known that the mitotic processes of cancer and the forming and dividing of the chromosomes were riotous and irregular, like the rest of its growth. But it was reserved for these investigators to discover the extraordinary fact that the majority of dividing and multiplying cancer cells had, instead of the normal number of chromosomes, exactly half the quota. In other words, they had resumed the powers of the germ, or sexual, cells from which the entire body was originally built up, and were, like them, capable of an indefinite amount of multiplication and reproduction. How extraordinary and limitless this power is may be seen from the fact that a little group of cancer cells grafted into a mouse to produce a Jensen tumor, from which a graft is again taken and transplanted into another mouse, and so on, is capable, in a comparatively few generations, of producing cancerous masses a thousand times the weight of the original mouse in which the tumor started.

In short, cancer cells are obviously a small, isolated group of the body cells which in a ghastly fashion have found the fountain of perpetual youth, and can ride through and over the law-abiding citizens of the body-state with the primitive vigor of the dawn of life.

This brings us to the most practical and important questions of the problem: What are the influences which condition this isolation and outlawry of the cells? What can we do to prevent or suppress the rebellion? . . .

Most investigators who have studied the problem in a broad-minded spirit are coming gradually to agree to this extent:

First of all, that one of the most powerful influences conditioning this isolation and revolt of the cells is age—both of the individual and of the organ concerned. Not only does far the heaviest cancer mortality fall between the ages of forty-five and sixty, but the organs most frequently and severely attacked are those which between these years are beginning to lose their function and waste away. First and most striking, the mammary gland and the uterus in women, and the shriveling lips and tongue of elderly men. To put it metaphorically, the mammary gland and the uterus, after the change of life, the lip, after the decay of the teeth, have done their work, outlived their usefulness, and are being placed upon a starvation pension by a grateful country. Nineteen out of twenty accept the situation without protest and sink slowly to a mere vegetative state of existence, but, in the twentieth, some little knot of cells rebel, revert to an ancestral power of breeding rapidly to escape extinction, begin to make ravages, and cancer is born. . . .

Not less than sixty-five to seventy-five per cent. of all cancers in women occur in atrophied organs. . . .

As regards the influence of chronic inflammations and irritation, much can be done, and here is our most hopeful field for prevention. Warts and birthmarks that are in any way subject to pressure or friction from clothing or movements should be promptly removed, as both show a distinctly greater tendency than normal tissue to develop into cancer. Cracks, fissures, chafes and ulcers of all sorts, especially about the lips, tongue, mammary gland, uterus and rectum, should be early and aseptically dealt with. Jagged remnants of teeth should be removed, all suppurative processes of the gums antiseptically treated, and the whole mouth-parts kept in a thoroughly aseptic condition.

Thorough and conscientious attention to this sort of surgical toilet work is not only valuable for its preventive effect—which is considerable—but also because it will insure the bringing under competent observation at the earliest possible moment of the beginnings of true cancer.

For the disease itself, after it has once started, there is, like treason in the body politic, but one remedy—capital punishment. Parleying with the rebels is worse than useless. Pastes, caustics, X-rays, trypsin, radium—all are fatally defective, because they suppress a symptom only and leave the cause untouched. Only in one form of surface cancer, the so-called flat-celled or rodent ulcer, which has little or no tendency to form spore cells and attack the deeper organs, are they effective.



Nothing is easier and nothing more idle than to destroy and break down cells which have actually become cancerous; but so long as there remains in the body a single nest, or even cell, of the organ in which the revolt started, so long the life of the patient is in danger.

Absolutely the only remedy which is of the slightest value is complete removal with the knife. The one superiority of the knife, shudder as we may at the name of it, over every other means of removal lies solely in this fact, that with it can be removed not merely the actual cancer, but the entire gland or group of surrounding cells in which this malignant, parricidal change has begun to occur.

The modern radical operations for cancer take not merely the tumor, but the entire diseased breast, for instance, and all the lymph glands into which it drains, clear up to the armpit, with the muscles beneath it down to the ribs. Where this is done early enough the disease does not recur. Such radical and complete amputation of an organ or region as this is possible in from two-thirds to three-fourths of all cases if seen reasonably early.

With watchfulness and courage, our attitude toward the cancer problem is one of hopeful confidence.—*Saturday Evening Post*.

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## THE SOLVING OF THE MILK PROBLEM

BY SAMUEL HOPKINS ADAMS

(THE health of our families, especially of our little ones, is directly conditioned by the purity of their nutriment. The ability of the infant organism to build its various tissues, including the teeth, is largely dependent, as this article shows, on pure milk. This digest shows what Copenhagen has done and several American cities are doing.

The information here given may enable us to advise the parents of our little patients more intelligently. It may prompt some of us to public activity on these lines which affect our professional lives.—EDITOR.)

Unprotected milk is, so to speak, a standing invitation to microscopic destroyers. Dried sputum from a consumptive workman in a carelessly conducted stable is carried, by a draught of air, to an open pail or can, and a year or so later some child dies of intestinal tuberculosis. Cause and effect are widely separated in point of time, very likely in point of distance, also, but the connection is as direct and logical as the fall of the victim upon the report of the murderer's pistol. Pus or scar-tissue from an ill-conditioned animal passes into the pail with the stream from the udders, and a series of "summer epidemics" of bowel disease, with a startling total of fatalities, is attributed to the



weather man's high temperatures, instead of to the dairyman's foul product, where the true discredit falls. A residue of infected water from some old cistern remains in the cans which an ignorant or careless farmer has "cleaned"—with poison; the bacilli spread throughout the supply, and from that to other supplies with which it may be mixed by the retail dealer (for distribution of germs means not dilution but multiplication); and a "mysterious dispensation of Providence" carries off a group of people in a neighboring city *via* the typhoid route. Prevention in this case is eminently practicable. Copenhagen, the metropolis of a nation the very life of whose commerce is dairy-produce, has proved it; proved it with so irrefutable a proof that its system is now the world's model.

#### COPENHAGEN THE DAIRY MODEL OF THE WORLD

Great reforms in the department of hygiene seem to follow upon a loss of patience on the part of some person or persons hitherto uninterested in the subject. A Sunday-school superintendent in Pittsburg got angry about the ill-smelling sediment which he found at the bottom of his house-filter, and the immense filtration system that is to-day absolving the city from the scandal of the highest typhoid rate known to civilization took its origin from an indignant illustrated lecture that he delivered to his pupils. New Orleans had to get murderously enraged at its predatory mosquitoes before it roused itself to concerted slaughter of them, and thereby exorcised the demon of yellow fever for which they were responsible, and which for years had been, by turns, a lurking terror and a devouring dragon. In Copenhagen the man who struck fire was G. Busck, a gentle, wise, and shrewd wholesale butter-dealer. . . .

It was thirty years ago that Dr. Busck, then in his early middle age, noticed that one of his best workmen showed signs of concern and abstraction. He questioned the man.

"It is my baby that I am worrying about," said the employee.

"If the baby is ill, why not send him to the hospital?" said Dr. Busck. "That can be readily arranged."

"He isn't ill," said the man, "but he's very frail. Still, we think we could manage to raise him if we could only get good milk for him."

Now, Dr. Busck knew all about butter and cheese, but milk, as a food, had never specially engaged his attention. To him, as to thousands of others, it seemed obvious that a city like Copenhagen, the commercial center of the world's greatest dairy trade, must naturally abound in good milk. His own supply was all right; at least, he had always supposed so. But the troubled employee's point of view was different.

"I don't know where to find any that's good," he said. "Even the poor stuff that I've been getting is shut off now." . . .

Being a man of action, Dr. Busck called together several friends of his, three university professors, a philanthropist, an eminent diplomat, a physician, and a lawyer (note, if you please, the overwhelming and mirth-inspiring proportion of the "Utopian idealist" type) and with them formed the Milk-Furnishing Society of Copenhagen—in the more compact Danish, "Kobenhavns Maelkeforsyning"—with a capital of about \$2,500. . . .

Not only has it been successful financially and as an agent for the public benefit, but it has actually purified—sanitized, so to speak—the entire milk trade of Copenhagen, its influence even spreading to the outlying country, as well as to Norway, Sweden, and Germany. So that, in describing the methods and standards of the Milk-Furnishing Society of Copenhagen, I am practically giving the official requirements (with some minor modifications) of the City of Copenhagen.

#### POLICING THE CATTLE FOR DISEASE

No dairies, farms, or cattle are owned by the Society. Its functions are those of distribution and control solely; its aim is education and sanitary protection; its official motto, "Pure Milk from Sound Cows," Forty farms, with about five thousand cows, are under a rigid contract with the organization. By this contract the farmers bind themselves to feed their milk cattle on certain specified classes of fodder, to turn them out to pasture during the season, and to report at once any disease among the animals, the employees, or the family of any one connected with the dairy.

The Society's veterinarians inspect every cow in every stable at least once a month, and have the right of entry and inspection at any time. The farmer is further encouraged to report any suspicious ailment of his cows, since, between the time of such report and the arrival of the veterinarian, all milk from the suspected animals is paid for by the Society at the regular rate, although none of it is used. Should contagious or infectious disease appear among the staff of the dairy, or in any household wherein a member of the staff lives, the Society refuses all milk from that dairy until such time as it is certified uninfected and fit for use, and this at its own expense, since it pays for the total output. That is, the Milk-Furnishing Society of Copenhagen guards itself not only from selling infected milk, but against selling milk that is even under suspicion of being infected.

#### ANTISEPTIC MILKING IN ANTISEPTIC STABLES

The contracting dairy-farms are required to be and are models of cleanliness. The stables are specially built, in most cases, and are

kept like a New England kitchen. The cattle themselves are groomed, before milking, like horses for a show-ring, and if this seems to smack of over-cautious precision at first thought, it must be remembered that an ungroomed cow may, while being milked, shake filth or hairs into the milk receptacle. No dry-sweeping in the stables is permitted, to fill the air with possible germs and inevitable dirt. The milkers are dressed in special costumes, frequently changed, and there are always soap, water, and towels convenient to the milking room, which the milking force is expected to use frequently. Immediately after milking, the milk is strained, poured into the sterilized receptacles provided by the Society, cooled to five degrees centigrade, and set in a cold chamber. . . . Usually the milk reaches the consumer before it is twelve hours old; always before it is twenty-four hours old.

Under our American system or lack of system, milk that is unexceptionable when it leaves the dairy, may be foul, and even dangerous, by the time it arrives at the table of the consumer. Manifold are the mischances of infection in handling, mixing, and distributing. All this the Society guards against by its own perfected regimen. I saw its forces at work one morning at about two o'clock, when the early shipments were coming in. Imagine a huge, cool, cement-floored, speckless-walled building, fairly shining with cleanliness, peopled by a busy throng of white-clad, swift-moving men and women, and filled with a most infernal clatter as of sounding brass and tinkling cymbal. That the conduct of any business could be carried on amidst that boiler-shop din of metal seemed incredible; yet all went with the precision of machinery, and, to a great extent, by the precision of machinery. Out of the freight cars came the big, cooled cans, to be instantly unsealed and opened. Suddenly the regular procession of containers was interrupted. A word was spoken, and one of the receptacles was whirled aside.

"Unsealed," explained the superintendent, who, like most educated Danes, spoke excellent English. "That goes to make butter."

"Has it been exposed?" I asked in surprise, for the can appeared to be tightly covered.

"Probably not," he replied, "but we take no chances. Unsealed cans go to the butter department, where the processes prevent any harm resulting in case foreign matter may have got in."

The rest were weighed, the temperature was taken, and the milk arranged in classes and sampled, one set of samples going to the fully-equipped laboratory which is part of the plant, the other being turned over to a corps of expert tasters. . . .

These women work at their delicate task only an hour at a time, since it is believed that after that period the sensibility of the tongue

becomes dulled. They have been selected by laboratory tests for skill in detecting abnormalities in the milk. For every imperfect sample the taster receives a premium of about seven cents. All milk set aside by them is devoted to second-class butter or cheese, and the farmer who furnished it receives a decreased price for that particular can.

"MILK NO CLEANER THAN THE DIRTIEST THING IT TOUCHES"

After being tasted, the product is strained through three filters of boiled gravel, after which it is cooled again and bottled by machinery, or distributed to the large metal receptacles that are carried about the city in the ingenious delivery wagons which, during the handling of the milk, are being carefully washed down in the inner yard. As much care is taken with the bottles and cans as with the fluid itself; for there is an apothegm of the milk trade that "Milk is no cleaner than the dirtiest thing it touches."

The original containers, as soon as they are emptied, are given over to the clutches of various singular and expert mechanical devices which seize them, clean them, wash them out with cold water and caustic soda, with hot water, and with lime water, until the most elusive germ hasn't the smallest chance of escaping alive. Then they are sealed airtight and sent out, thoroughly aseptic, to receive again their quota of clean, pure milk, and to preserve it clean and pure. Nor are the employees any less carefully looked after than the implements of their trade. All are clad in white cotton garments which, in the case of those who handle the special milk for infants, are changed every other day. This clothing is washed free by the Society, which has a laundry list of six thousand pieces per week. There are about four hundred and thirty employees in the plant, of whom two hundred and thirty are boys employed in the delivery department, one hundred and twenty are men, and eighty are women. The head dairy-maid is an expert, who, in addition to her work in the headquarters, makes a tour of inspection and instruction about the farms twice a year.

In the United States the grade of milk that the Milk-Furnishing Society of Copenhagen supplies would be known as certified milk—that is, certified by the local medical society, that exercises a general supervision over it—and would bring from eighteen to twenty-five cents per quart. Dr. Busck's concern furnishes a product that is, in one sense, certified; it is certified by the repute of its commercial sponsors, and is fully as pure as any milk of which I know in America, of whatever medical certification. In addition to its own surety of system, the Copenhagen Society has the advantage of frequent visits of inspection from Dr. G. von Ellbrecht, one of the noted experts of the nation, and Dairy Commissioner of the Royal Agricultural Society.

It is worth a passing notice that on his recent visit to this country Dr. von Ellbrecht called at the headquarters of the New York concern that vaunts itself most loudly upon the purity of its product and the carefulness of its methods, presented his official card with the request that in the interests of the pure-milk movement he be shown about the dairy—and had the door shut in his face. So much for open methods—commercial methods—in this country.

. . . Yet, instead of injuring the dairy industry of the nation, these restrictions have aided and extended it. At the present time the daily consumption of milk per capita is more than double what it was before the establishment of the regulations. I can see no reason why any American city with a sufficient sanitary force and a genuine public demand for safe milk should not, now that the way has been indicated by the Danish metropolis, arrive in time at the standard of excellence attained by Copenhagen. . . .

Over one class of milk the regulations throw an extra protection. This is what is known as "infant's milk," and is sold under that official label. Dr. Busck's workman would to-day find no difficulty in obtaining perfectly pure and safe nutriment on which to bring up his delicate child. On payment of the special price, he could buy, in any part of the city, a supply guaranteed by the law of the city, beyond any chance but that of human fallibility, to have come from sound, healthy cows, to have come to the city in sealed, aseptic cans, and thence to have been transferred by scientific methods to equally clean and aseptic bottles, and to be just as pure as when it was drawn from the cow. That animal, before being qualified to furnish this special quality, is guaranteed to have passed a veterinary's examination as to condition, care, and feeding within fifteen days, and the tuberculin test for bovine tuberculosis within one year.

#### WHAT THE TUBERCULIN TEST HAS ACCOMPLISHED IN DENMARK

A word as to this tuberculin test, which has been so bitterly fought in this country. Only a few months ago a metropolitan newspaper that has constituted itself the consistent foe of public health reform bragged that it had prevented the Department of Agriculture of New York State from establishing and carrying out the test; and at this writing it is striving to duplicate this vicious achievement in Louisiana. Its pretext, and the pretext of all those who oppose the campaign against tuberculous milk, is that it works a hardship to the farmer to destroy his consumptive cattle, or to set an embargo upon the poisonous milk from them. Doubtless. But it also works a hardship to the city dweller who buys that milk for his child, to lose that child by intestinal tuberculosis. Dead child, or dead cow; which?

The newspaper advocates the dead child. I think no newspaper in Denmark would be so temerarious. Largely by reason of the good-will of the dairy farmers themselves, who follow the lines laid down by Professor Bang, a Danish government expert, and, in his own line, a great educator, bovine tuberculosis has been reduced to a minimum in the dairy nation, and that without any destructive loss to the farmers. They are now educated to the point of reporting suspicious cases among their cattle. If the disease is incipient, the cow is isolated and watched; if the chances of cure are remote, the beast is ordered killed and such part of the meat as is not affected may be sold. In cases where the meat itself is condemned, the government indemnifies the farmer to the extent of the value of the beef. On the other hand, failure to report tuberculosis results in the farmer or dairyman being fined. So admirably has this system worked in the rooting out of the disease, that to-day the great abattoirs show only from five to ten per cent. of tuberculosis in the first degree, four per cent. in the second degree, and one per cent. in the third degree. Contrast this with the record of the State of New York, in which, according to the best estimates, 30 per cent. of all the herds are tuberculous.

So much for the effect upon cattle. Now consider the effect upon human beings of protecting the milk, not alone from tuberculosis, but from the various bacilli which carry off so many children by intestinal ailments. In 1880, when the pure milk movement was young, out of every one thousand deaths in Copenhagen 219 were of children under one year. From 1902-1906, the period of the latest attainable figures, the ratio of infant mortality to total mortality was but 144 in a thousand. Compare this with Chicago's 210, with Cleveland's 256, with Savannah's 228, with Fall River's 420, even with the figure of so progressive a city as Buffalo, where, out of every one thousand deaths, 201 are those of children under one year.

If this means anything, it means something very wrong in our American system. Wherein do we fail? For the answer I look to Buffalo, a city nearly as large as Copenhagen, and, like Copenhagen, situated in the midst of a rich and open grazing country; a city, moreover, far above the American average in its intelligent concern with public health matters, and having as its Commissioner of Health an able, conscientious, and non-political hygienist, an expert in milk, Dr. Ernest Wende. . . .

#### BUFFALO'S ADMIRABLE SYSTEM

Every milk dealer, and every dairyman, farmer, or citizen keeping a cow within the city limits, must have a license from the Board of Health. Milk houses, under the terms of this license, must be kept in



a clean and sanitary condition. The sale of watered, adulterated, or impure milk, or of milk from diseased, ill-kept, or badly fed cattle is prohibited. All milk houses, milk-boxes, and milk wagons are open to the inspection of the Health Department at all times. The department may forbid the entry into the city of any milk that falls short of its standards. The system is so sound, it is so far superior in all respects to that of most other American cities, that to criticize it seems both ungracious and unjust to Dr. Wende, who is responsible for it.

#### THE "TELL-TALE REGISTER" DEVICE

The best Buffalo can do—and a very good best, under present conditions—is to check swiftly and decisively all illness arising from impure milk. It does not do away with impurity in the milk supply, as does Copenhagen; nor, like that city, does it defend itself from the initial attack of milk-born disease. But it does the next best thing; it promptly detects the presence of dangerous milk and checks the spread of infections therefrom. Every year some promising little onset of scarlet fever, diphtheria, or typhoid, which, in another city, might well reach the proportions of a formidable epidemic, is pounced upon and smothered before it can get a really good start, by the city's undermanned, underpaid, but energetic and efficient health forces. This is accomplished by means of the "tell-tale register," a device that every municipality in the United States should adopt, so simple and efficacious is it. It consists of a ledger in which is entered daily every case of important contagious or infectious disease, reportable by law, together with the name of the milkman from whom the household of the patient gets its milk. Should two or more cases of typhoid, scarlet fever, diphtheria, measles, or smallpox appear upon the same milk route, the milkman is under suspicion at once, and a bacteriological examination of his supply is made, as well as an inspection of his premises. If no disease is discovered in his household, nor source of infection in his milk house, the trail is followed to the farmer from whom his supply comes. Almost invariably the source of the disease is definitely traceable. Then the milk from that source is prohibited and the incipient epidemic flickers out after a few more cases have appeared. In the event of a spread of infantile or diarrheal disease along one milk route, the bacteriologist of the department goes to the suspected farm, makes a detailed investigation into the conditions, and usually finds streptococci being milked into the pail, from cows with sore or tuberculous udders.

#### WHERE BUFFALO'S SYSTEM FAILS

But why, since Buffalo is so adept in detection, is it not equally competent in prevention? Because of two weaknesses in the system,



for neither of which can the Health Department be held culpable. First, the source of the milk supply, too widespread to come within the supervision of the city authorities, are not properly looked after by the regularly (and, as I believe, mistakenly) constituted authority, the State Department of Agriculture.

The other weakness in the Buffalo system—is the lack of an adequate force of men to enforce its regulations. Practically all the work of keeping watch upon four hundred regular milk dealers and some two thousand grocery stores which sell the commodity in small amounts, is allotted to four men, no one of whom can give all his time to it.

With Dr. May, of the Buffalo department, I visited a number of the milk houses; not the highest class alone, but all classes. . . . I found disregard and violation of the regulations in some places, mostly in minor details, and attributable to a gentle lapse into slipshod methods that more regular inspection would have prevented. On the other hand I found a most encouraging intelligence and interest on the part of the milkmen, even down in the heart of the Polish quarter of East Buffalo (where some of the milk houses were a real pleasure to see), that told of a long and steady campaign of education. The milk ordinances of Buffalo are well worth carrying out to the last letter.

Other American cities are making progress along these or parallel lines. New York, thanks largely to the initiative and executive ability of Dr. Walter BenseL, has established an excellent code which it is attempting to enforce, and with encouraging success, considering the magnitude of the problem. New Orleans has got a lively fight on its hands against its dairy farmers (some of whom, as I can state from observation, maintain as filthy cow stables as can be found in the world) because it is striving to enforce reasonable protective legislation against the poisonous milk with which it is flooded. Boston, with its own efficient department backed by the progressive Massachusetts Board of Health, which has control of the milk supply of the State, has done much. Washington and Kansas City both have workable systems of milk-protection, rising to a steadily higher standard, and Cleveland, Providence, and Philadelphia are among the cities that are undertaking needed reforms. Barring the anti-tuberculosis movement, there is no line of hygienic endeavor that has enlisted as widespread and hopeful an interest in this country as the problem of obtaining pure milk.

#### PASTEURIZATION A DANGEROUS MAKESHIFT

There is to-day no eminent authority in the medical world who believes that pasteurized milk is as good as pure raw milk. Pasteurization is defended as a makeshift, as a method of destroying disease-

bearing germs, by boiling them in the milk, and serving, as it were, a sort of bacillus soup. But even thoroughly boiled germs are not valuable articles of nutriment. Boiled filth—and as soon as you begin to pasteurize you open wide the door to foul milk, since the foulness is concealed, not destroyed in the cooking—is not an eminently desirable item of diet, even when boiled in milk. Moreover, the bacilli of putrefaction, which are a fertile cause of diarrheal disorders, fairly hold revel of multiplication in pasteurized milk, whereas in raw milk they are kept under by the natural bacilli of the fluid, which fall an early prey to boiling. Finally, pasteurized milk causes scurvy, rickets, anemia, and malnutrition in children. The 1899 Sanitary Commission of Copenhagen, in its experiments with samples of milk treated by this process, found that, as a rule, by the time they reached the consumer, they were as rich in bacteria as ordinary milk, and that their bacteria averaged a greater efficiency for harm. Said a very distinguished Danish scientist recently:

“The dealer who pasteurizes good milk is a fool. The dealer who pasteurizes foul milk is a knave.”

The sole excuse for pasteurizing bad milk has been that it was the lesser of two evils. Copenhagen has shown to the world that pasteurization is an unnecessary evil, and that the slogan raised thirty years ago by Dr. Busck and his little band of altruistic associates, “Pure milk from sound cows,” is a universally attainable ideal.—*McClure's Magazine*.

## THE REAL SELF AND DRUGS

BY WILLIAM HANNA THOMSON, M.D., LL.D.

ABOUT the only things worth noting in investigating the nature of our mental operations are unmistakable facts. On that account we invite the reader to come with us to a drug store. On the shelves are bottles filled with facts which, when taken in, will start in us a multitude of thoughts, with this peculiarity, that each bottle awakens its own kind of ideas and feelings. Let us see what happens to people when they freely sample the different bottles.

The first customer takes laudanum, not in drops as a medicine, but by long habit he can now swallow it as a drink. That done, soon a sense of intense interest is awakened in him similar to that of an amateur fisherman when he gets a strong bite. All fishermen know that every concern in life is displaced for the time by that pull on their line. At first our customer scarcely knows what his laudanum-born interest is about. But soon a crowd of thoughts arrive, bringing with them the pleasing assurance that to produce such a succession of splendid ideas this thinker at any rate owns a first-class brain. . . .

As might be inferred, the man is all the while centered on the creations of his own imagination, and therefore the opium-eater is solitary and dislikes interruption by others. But after the effect has passed off, it is succeeded by a sense of horrible vacancy sometimes referred to the pit of the stomach, which causes a restlessness that nothing will relieve but more opium.

The next in order is the man who, if the store is in a prohibition town, asks with a slight movement of one eyelid for *spiritus vini gallici*, vulgarly known as brandy. It first makes him smile, and soon he shows that not so much his thoughts as his emotions are excited. As it is not natural for a man to keep his feelings to himself, but rather to share them with others, the alcohol taker contrasts with the opium taker, in being very sociable. The usually reserved man admits people into his confidence and talks familiarly with everybody present. When a number are sharing their drinks and feelings together with laugh and song, the swift flow of emotions may unhappily strike some rock, which so violently deflects the stream that heads collide and the scene ends in a general row. . . .

One of the drugs that are most striking in their effects is hasheesh, or *Cannabis Indica*, largely taken in Asiatic countries, where I used myself to meet its votaries. Its chief peculiarity is to make one believe with all his might whatever is suggested to him. If he is an Arab, tell him that he is a sultan and straightway he becomes "chesty," to use Devery's term, and royally orders heads to be cut off. Tell him he is a rooster, and he will crow. I knew of two Americans who experimented on themselves, and when the first was told that he was like a locomotive, he snorted and whistled, and kept going round the table puffing and blowing until he dropped from sheer fatigue. The other somehow conceived the idea that he was dead, and forthwith gave elaborate directions for his own funeral, till he waxed wroth at the unseemly mirth of his companions when they should have wept. . . .

So far we have been reviewing the purely mental or intellectual effects of these different drugs. Would that we could stop with those mysterious results! But each of them can and does do infinitely worse things, and each again in ways peculiar to itself. . . .

The opium fiend, from long living in an unreal world, becomes transformed into the most all-round liar in the land, the very embodiment of unverity. One of them victimized me with a loan that he might go and close the eyes of his dying mother, when her eyes needed no such closing for years afterwards. Another sent from a Western city to his wife a telegram which purported to come from an undertaker demanding money to pay for shipping his body home; this money when it came he—and unfortunately no undertaker—pocketed, and then

went his way. I have had such fellows tell me with tears in their eyes that their chains had been broken the night before in answer to their earnest prayers, when I could see that they had taken a dose that same hour. And so their deterioration progresses till all sense of honor is gone and they sink below that last refuge of self-respect—shame. . . .

#### ARE WE MACHINES?

But how about all this and ourselves? We seem to feel and to think, and therefore to be, according to what we swallow. One can readily admit that his physical frame is made from foodstuffs, but here we note that if we take enough laudanum, we think we feel and act as opium-takers do, and every one knows how different a whisky sot is from a teetotaler. Our brains therefore appear to be like those music-boxes which turn out different tunes according to what disk is put in them. If this be not so, then why can drugs so specially modify our whole mental and spiritual being?

According to some, these actual facts and many others of a similar kind prove that, after all, we are but material mechanisms, which work solely according to their make-up. The logical conclusion from this statement is that man is altogether a thing, and a desirable or an undesirable thing just as he happens to be constructed. If he is made badly, as by birth from a bad stock, he will, and indeed must, be bad, while if he is well made, he will stay good. It all depends on the material conditions of his material brain.

#### DRUGS DO NOT AFFECT THE BRAIN

No sensible person believes this, and yet this doctrine seems to fit in with so many facts that some clear demonstration of its fallacy is much needed. It is the physician who should be asked what he has to say on the subject, because naturally he is the one best qualified to know whatever is known about both drugs and brain. Moreover, lately he has made great discoveries about the relations of the brain to the mind by observations, which he alone could make, of the effects of local injuries to brain matter caused by disease or by accident.

But how different the facts about these two subjects are from what most people imagine, he shows by saying that *drugs no more affect the brain than insanity itself does—that is, not at all!* In support of this statement about insanity, he can refer to the most complete description of the microscopic structure of the brain lately published, which is by Dr. A. W. Campbell (Cambridge University Press, 1906), and is based on the laborious investigations of eight normal human brain hemispheres compared with the brains of two chimpanzees and one orang. But of the eight human hemispheres six were those of lunatics who died insane, Dr. Campbell merely remarking of them “that he was convinced

from a lengthy experience in the pathological laboratory attached to the Rainhill Asylum, that in such lunatics all the microscopic methods at our disposal will fail to disclose changes, either in the nerve cells or fibers, which we can refer to their altered mental condition." In other words, that insanity neither affects nor deranges the brain structurally.

As to the drugs which we have mentioned, he denies that any of them injure the brain, except alcohol, which does injure the brain, though not at all on account of its mental effects, but for the very different reason that alcohol has a chemical affinity for the albumen and fats of the tissues. By this chemical action it slowly alters and damages brain tissue, but this result in nowise differs from similar alterations produced by alcohol in the tissues of the liver and of the kidneys. Tissue changes in the brain will, of course, derange its working, as is illustrated also by the destruction of the mind accompanying that ruin of brain matter caused by the slow action of the virus of syphilis when it causes paresis, or the so-called general paralysis of the insane. But those drugs whose mental effects we have described never leave a trace of their action on the brain, nor do any other similar agents. Tobacco is a powerful poison, and yet no autopsies can show the least difference between the brain of a lifelong smoker and that of one who never lit a cigar. Likewise, the brain of an opium fiend is indistinguishable from any other brain, and so on for the rest.

Then as to the relation of the brain to the mind, the physician can demonstrate that the brain no more thinks than his pen thinks when he writes with it. No instrument ever does anything itself, however used. And that the brain is not itself the source or producer of thought, but rather only the instrument of the thinker, is proved by the discoveries made by the physician which show why it is that only one-half of the human brain has any relation to processes of thought. In this respect the human brain differs immeasurably from all other brains—not in its structure, for in this it closely resembles an ape's brain—but solely in that one alone of its two halves is the thinking brain, while the other half is only that of the animal *Homo*, because it does not think at all, but, like other merely animal brains, is concerned with nothing but bodily movements and sensations.

#### ONE HUMAN AND ONE ANIMAL BRAIN

Further, he has discovered that in what may be called the human half, in distinction from the animal hemisphere, are the actual material places where, and only where, the great and exclusively human mental faculties reside. Elsewhere in the head they are not found. The anatomist had noted before that our brain matter is collected in two sym-

metrical hemispheres, which are as perfect pairs as our two eyes and our two ears, while the physiologist is certain that originally both hemispheres are equally good for acquiring mental endowments. But neither anatomist nor physiologist can see the brain thinking. None but the physician, by his above-mentioned observations, would have discovered that even a special mental operation must have its own little special locality among the many other mind-endowed places in the human hemisphere.

#### HOW WE MAY LOSE OUR NOUNS

Thus, Ralph Waldo Emerson lived for some time no longer Emerson in word or thought. He began by losing not his verbs, but all his nouns, because the place for nouns in his left brain was spoiled. He had the same place all right in his other hemisphere, but it was then too stiff with age to take the impress of a single noun. But likewise all the chief mental faculties may go together, if the damage is extensive enough in the *thinking* half. . . . Briefly, the two brain hemispheres in our head are analogous to two phonographs, because phonographs can no more themselves cover their wax leaves with words expressing ideas than they can make wax think. The phonographs are wonderful instruments, but they are never anything but instruments; and so the brain hemispheres are the instruments of the thinker, and nothing more, for if they could themselves think, then both hemispheres would think as a matter of course, when, as a matter of fact, only one of them has a single imprint of the human *mind* in it.

*What is it, therefore, that thinks? Unquestionably the human personality, which is itself independent of the brain that it uses.* So far as the brain is concerned, it is simply physical in its structure and chemical in its composition. But here in one of its halves we are face to face with the tremendous Exception to everything earthly. The evolutionist can make a good showing that in structure man's brain differs but little from the chimpanzee's, just as it ought to in the ascending series of animals. But when it comes to the human *mind*, the evolutionist has to quit. What but a mind worked by a man could both weigh and accurately locate in the heavens a great planet, which neither he nor any one else had yet seen? And so the human world abounds with innumerable utter impossibilities for mere animals to achieve. Every article in an ordinary city house, be it a thermometer or a book, or anything else in it, is equally an impossibility for animals, by any process of evolution, to attain the power of producing.

Mentally, therefore, man is as much out of keeping with the entire succession and developments of evolution as any being from another world would be, and those who would still say that because the human brain so closely resembles that of the ape these two cannot be far apart,



are themselves their only good arguments. Meanwhile, for this human thinker one instrument for thinking is enough, and he does not need two hemispheres any more than a violinist needs two violins. The second hemisphere is then only to provide against accidental damage to the first, when, if he be yet young, the thinker can in time teach it to become human also in mental powers, but not if its chords have become too stiffened with age. . . .

#### MAN'S MIND NOT HIMSELF, BUT HIS

But if we are not our brains, nor our brains the same with us, then what are we? . . . *The real Self in us is as far superior to the mind as mind is superior to the brain. We shall see that the mind has little reason to dread the drug, but the Self indeed has, and should regard the drug as a most dangerous enemy.*

When we consider what the faculties of the mind are, such as memory, imagination, perception, and, above all, understanding or reason, it would seem that we could not ask for anything more to complete our individuality. But the truth is that a man's mind is not himself but *his*, and because it is his it is perfectly detachable from his true self, so that he can hire it out, as he would a wagon which he owns. This is just what lawyers do for their living. . . . But lawyers are no different from other people in this respect. Every one's mind is entirely distinct and separable from himself, as the further discoveries of the physician will now demonstrate.

We have already shown that at birth no place for a human *mental* faculty existed anywhere in the head. The places for those faculties are all found afterward in the educated hemisphere, because Something distinct from either brain or mind has meanwhile been dealing with the brain matter of that hemisphere as marble is dealt with by the sculptor. No one lesson of modern science about our make-up is more important than this. By purposive stroke upon stroke, the sculptor slowly fashions stone into the likeness of a man's head; and by what is very like repeated purposive strokes, called will stimuli, a man fashions a speech center within his head. This is how mind and matter really come together. There is no other way for this marvel to happen.

Neither the mind nor brain matter can itself create this union. A man may imagine and perceive and reason that it would be desirable for him to learn one of the great European languages which he does not yet know, but of what use would these mental exercises be for such a purpose? Not till by his own persevering effort he has slowly organized places in his brain for that language will it be there, and, moreover, only he can take the needed trouble of months and years of repeated purposive stimulation of the corresponding brain cells to make them do



this new thing. Once he has created such a brain place, it is his indeed, more so than his hand or foot, because they can be amputated, but not so any *acquired* human faculty or endowment. It lasts as long as its brain place lasts.

#### THE REAL SELF IS THE WILL

We are thus brought finally to that centric element in us which, as we have said, outranks the mind as truly as the mind outranks the body. We are altogether what it is, whether we be strong or weak, good or bad, for as it slowly moulds brain, so it slowly but permanently moulds that most personal of things, character. It is the conscious Purpose alone in us which *does* anything, and what can a strong purpose not do, especially with brain matter? Helen Keller's brain was deprived by disease in childhood of all hearing and seeing cells; but her indomitable will, and nothing on earth but her will, dealt so with other brain tracts that she is now a highly educated woman in many languages, and an authoress. How this fact alters all standards of estimation! Excellence of body is good, but that does not lessen the number of handsome fools, or of silly beauties. Fine mental gifts are great gifts, but that does not prevent many of their possessors from being failures in Life's upward way, because they had no staying power for the climb. *A man with a strong will can make his human hemisphere abound with great educated centers*, because he can take the time and the trouble to make them. The bright, but weak-willed, man does little after he is fifty but sigh over past indolence or, more commonly, whine at his bad luck.

#### HOW DRUGS INJURE US

But we must now come back to our original subject, drugs, though in such a connection as to make the mere mention of them repulsive. On the one side is a splendid being, with a majestic endowment whereby he can rule and direct both body and mind, and himself make a brain matchless for its powers. On the other is a human wreck, wholly thus from addiction to a drug. Did that baleful agent injure his body? Not much, for I have known a victim of opium to outlive both near relatives and friends of former years. Nor do such things perceptibly injure the mind, for many of these poor creatures can yet talk beautifully and write elegantly. *But in them the Will can no longer rule! That is why the man is ruined. The drug has completely dethroned the will, and when the will falls, everything good in the man comes down with it.*

How the drug does all this we do not know. The giant Mauritania safely rushes past rocks and shoals because a small wheel in it, which a child can turn, rules a powerful mechanism under water, 680 feet from the wheel, and so directs the leviathan's every movement. It may be something like this in man which a paltry drug can so derange that life's

voyage ends in total loss ere the haven is reached. It is sad, then, to note what a subordinate official the mind has been all along. Every day it protests with all its power of reason that the drug is a curse. That is what the great intellect of poor Coleridge told him that opium was, but he could not help himself, though he could still talk like a genius. Carlyle complained that when Coleridge discoursed, his words ran beautifully, but ran nowhere. De Quincey likewise was always entertaining when he talked, but soon he would ask his listener for a loan of money. Just for diagnosis I often surprise a business man whom I suspect of taking too much alcohol with the question whether he is not becoming inclined to postpone opening business letters.

#### THE DRIVING POWER OF WILL

To sum up this aspect of our subject—what medical science now contributes to the better understanding of what we really are is: First, the creation, by the personality, of definite seats of mental faculty in brain matter. These, therefore, are material things, which can be destroyed by an umbrella-tip; as we narrated in a former article how the important speaking brain center in a man was thus destroyed. But no one really learns anything till he has moulded a brain place for it, just as he did when he moulded a speech center. For when a man has learned a number of different languages he has them imprinted on different brain layers, just as words are imprinted on different wax leaves in a phonograph. These brain layers are so separate that the man may suddenly lose one language by damage to its layer, while he can still speak in the other languages because their sheets are intact. But so is the whole of that educated hemisphere. It abounds in learned places, and in some persons it is wonderful how many trained brain seats they have where special knowledge, or special skill, reside; but any one of these can be mechanically ruined.

All this is beautiful, but, alas! why are we not made so from the start? No one is born with a single *mental* faculty. He must *acquire* everything of the kind. When he is a child he acquires such things easily. It is wonderful how much and how well a child learns. He will never learn so many new things in so short a time again, and all because his brain matter is then so plastic. But soon he has to go to school, and with school all fun in acquiring has departed. The reason is that before this period his mind, and not his will, was in evidence. The will is eternally tiring. Nothing fatigues like it. Left to itself, the mind enjoys nothing better than to feel and to think, provided that it be like a horse let out in a lot where it can freely run around and kick. But when its rightful owner appears with bridle in hand preparatory to mounting this horse himself, everything is changed. Soon this horse

finds his head turned to a road leading to some destination which this heavy rider intends to reach, however long the way or steep the hills before he gets there. Then, but not before, is an object achieved, but only as that man of great achievement, Thomas Edison, described it, by "inspiration two per cent., and perspiration ninety-eight per cent."

The reason this is all true is that for a man to become a man of any worth, one of the hemispheres in his head must be organized accordingly, and as we have demonstrated, this can be done only by the purposive will. Hence how deep the criminality of him who continues to indulge in that which is shown to paralyze the highest element in him—the Will!

While studying the interaction of mind and drugs the physician finds himself confronted with the serious subject of Insanity. But now that it is discovered both that mind-deranging drugs do not modify the brain, and that insanity itself is not a brain disease, there come into view also other important nervous affections, such as migraine, neurasthenia, hysteria, and epilepsy, none of which shows the least demonstrable change in the brain. But this whole subject opens up so many far-reaching paths for us to tread that we must defer its consideration for another occasion.—*Everybody's Magazine.*

## Editorial

THE new editor feels that the task which has fallen to him from so much abler hands would be heavy indeed were he not so well supported. Dr. J. N. Crouse, who has so largely built the magazine, and Dr. J. P. Buckley, who has so well discharged the editorial duties of the recent past, will give the magazine their hearty support and assistance in the future. The publishers have given the editorial staff free rein to make the magazine as instructive and effective as possible.

Some new plans will be tried. It is the purpose of the editors to impart information in the fewest possible words, so that no dentist need read more than is necessary to obtain the idea. What might be called "practical articles" will compose the bulk of the magazine. Highly technical and theoretical articles will usually be presented in the form of digests. These articles are very important; we should know what they teach.

A distinctly new line of articles will appear under the head "Business Building." This side of dentistry is just as important as the sides of theory and practice; but it is usually handled in a delicate, half-hearted way by those who mention it at all. There is no necessity for such hesitation; the ambition to acquire an honorable competence needs no excuse. This series of articles will not tell how to conduct a practice, but they will outline methods used by men who have been successful in building financially profitable practices. Articles which show practical business value in this department will be welcomed.

A certain dentist who fears not to say what he thinks, recently wrote some letters relating things he saw and heard away from home. We have secured a few of these letters and hope to get more. As no names can appear, the writer has been christened "Brother Bill."

Important articles on subjects connected with general health or physical welfare frequently appear in current literature. The well-informed dentist should know about these, and thus keep himself abreast of progress in lines allied to his own. Such articles are widely scattered among many magazines and are not easily accessible. In the department of "Digests" these articles will be presented in condensed form. They will afford a wide range of useful and interesting knowledge. It is hoped in this way to make the DENTAL DIGEST supply, more nearly than ever before, that current information on all subjects connected with his life-work concerning which the dentist should be informed.

Let me bespeak for myself and my associates your interest and help. The magazine will be as good as you help make it—no better. May the year now beginning be fruitful and happy for all of us and for the profession we willingly serve.

## HISTORICAL REVIEW OF THE "DENTAL DIGEST"

No time would seem more fitting than the present for a brief review of the opening history of this publication, since it is about to claim a new ownership and a new home. This change must, to some extent at least, serve as a dividing line, separating the ambitions and accomplishments of the past from the ideals and projected plans for the future, the comparative effects of which time alone can disclose.

The incipency of the DENTAL DIGEST may be almost directly attributed to the Dental Protective Association. For six years the work of the latter organization had been carried on without the use or aid of any independent organ or mouthpiece, but the need of such a means of keeping in touch with the profession was being felt more and more.

During the latter half of 1894 the time seemed ripe for the birth of the new venture. The field of dental journalism in its general sense was already covered more or less satisfactorily, by publications existing at that time; but new lines were to be devised and followed. The chief of these two, were two departments known as "Digests" and "News Summary," respectively. It was from the former that the publication took its name. The objects of these new departments were to give subscribers the best and latest of all dental journalism combined in one publication, thus serving as a review of the whole dental field to a greater or lesser extent.

With these primal objects in view, the first issue was prepared under the leadership of Dr. Allison W. Harlan who acted as editorial head for the first three issues, appearing in October, November and December, 1894. It was speedily shown that a popular note had been struck, for the success of the DIGEST was assured from the start. With the January, 1895 issue, a change was effected in the editorial chair and from that time Mr. D. Howard Crouse, elder son of Dr. J. N. Crouse, was responsible for the entire publication.

The succeeding years saw the DIGEST growing in popular favor, but this was not wholly attributable to the field it covered nor to the fact of its being the public organ of such an excellent and worthy organization as the Dental Protective Association. Rather must we turn to the many editorials appearing in each succeeding volume, for in this department as in no other, could vital subjects be discussed and opinions enunciated. Fearlessly, aptly describes the manner in which practically every subject was handled, and those that have personal acquaintance with Dr. Crouse can well understand why his editorial sayings, pleadings or attacks never lacked that proper spirit so necessary to accomplish the desired result. These were and have been almost up to the present time, the keynote

of this forceful man's ambitions, not for himself, but for his loved profession.

Thus it was until January, 1906, when Death carried off, in his young manhood, D. Howard Crouse, the editor for more than a decade, and one that had surely left his imprint on the roll of man's accomplishments here below. We could cover page after page in speaking of him now gone, but space only permits a brief mention. The DIGEST had become long before, a cherished and loved life-work, and never was he too sick to abandon his labors in this field until he ceased work for all time. Up to within a week of his death, he labored on the preparation of copy, so indomitable was his spirit and so great his love for the work.

Not long afterward the editorial duties were vested in Dr. J. P. Buckley. With Dr. Buckley's labors in this field most of our readers are, doubtless, more or less familiar. He assumed charge at a time when the difficulties were many and great, but in spite of these he willingly accepted the burden, worked hard and accomplished results that we certainly believe must have been appreciated by the large number of DIGEST readers. His work and his name have become an honor to the profession of dentistry in this country, and in going our separate ways we prophesy for him a most brilliant future, especially in his chosen sphere of research work.

*The Dental Brief* this month appears with a new cover design of very pleasing appearance. The same colors are used as in the former cover, but the design is so varied as to greatly improve the appearance. The magazine is issued in its usual excellent manner.

*The Dental Summary* for January comes out in a new form. It has been enlarged to standard magazine size; a new cover design of pleasing appearance adorns the front cover; and the type and text arrangements show careful thought and attention.

*The Dental Summary* has long since established itself firmly in the offices of thousands of up-to-date dentists. In the new form it will be more than ever welcome.



# BOOKREVIEWS

THE NASAL ADMINISTRATION OF NITROUS OXIDE GAS. By Frank Coleman, L.R.C.P., M.R.C.S., L.D.S., England, Assistant Dental Surgeon at St. Bartholomew's Hospital, etc., London. Published by Claudius Ash, Sons & Co., Ltd., 1908.

This pamphlet of twenty-four pages is a valuable contribution to anesthetic literature. It is not only of practical but historical value as the author begins with the earliest attempts at nasal administration of anesthetics in 1859, when Dr. Faure, of Paris, described a method of chloroform inhalation through the nose. He briefly describes the methods of Sansom, Richardson, Alfred Coleman, Junker, Carter Baine, Hewett, Clover, Patterson, Harvey Hilliard, Lennox, Levy, Bellamy Gardner, and then takes up his own appliance after giving due credit to what has been done by others. By others, I mean men across the sea, because no mention is made of what Americans have done in this direction. The author's appliance is necessarily a modification of the appliances that have gone before him. He claims a better fitting appliance than has ever been placed on the market, and if this apparatus will remain as firmly adjusted to the nares as the inventor claims, it is a long step in the right direction for all those dental practitioners who desire to use nitrous oxide for cavity preparation, removing pulps and for alleviating suffering during painful dental operations. It is a well-known fact that all dental operations can be performed painlessly by the use of nitrous oxide, nitrous oxide and air, and nitrous oxide and oxygen; and the only reason they are not used more frequently and by nearly all dentists is the fact, first, that but few know how to use them, and second, the apparatus necessary has been too cumbersome. Several pages are devoted to the use of the author's appliance and the directions for properly preparing and handling patients during the anesthetic stage, hints about extracting and operating that are timely and valuable. This essay will be found instructive to those who contemplate using anesthetics in their daily work, and even men of experience will find much of interest.

Those who would like to eliminate oxygen because of the added expense, will find described a method that might be worth investigating. The writer has no personal knowledge of the use of the apparatus, and is not recommending it, he only calls attention to it.

Historically and scientifically, the author would have a more ac-



curate and up-to-date treatise if he had included in his text the discoveries and inventions of our American anesthetists.

W. H. D.

PRACTICAL DENTISTRY BY PRACTICAL DENTISTS. Edited by J. N. Broomell, D.D.S. Published by The L. D. Caulk Co., Philadelphia.

A volume of 496 pages filled with just the sort of information hundreds of dentists want. The book is in two parts, the first operative; the second prosthetic. In each part the information concerning a certain phase of dentistry is grouped under that heading. Thus, Chapter No. 2 of part 1 deals with "Treatment and Filling Teeth of Young Children" and gives 49 hints which skilful operators have found valuable. Chapter No. 2 of Part 2 is given over wholly to "Crown and Bridgework," and contains over 40 pages of valuable hints.

Every dentist in general practice will find the volume useful; it will often help him solve perplexing questions and surmount real difficulties.

GEORGE W. CLAPP.

### Obituary

JOHN C. ALLEN, a dentist of Cincinnati, Ohio, died December 14, 1908.

RICHARD CLARK, 23 years old, died suddenly at his home in Tabor, Ia. Dr. Clark was a prominent dentist in his own city. He leaves a wife and two children.

JAMES MALONEY, aged 25, died at Olean, N. Y., December 18, 1908.

WILBUR F. McDONALD, a dentist of Ottuma, Ia., died December 7, 1908.

FRANCIS M. MOORE, a member of the Brooklyn Dental Society, died December 25, 1908. He was in his 55th year.

GEORGE W. CLUTTER, of Omaha, Neb., was found dead in his workroom on the morning of December 9, 1908. He was in his sixtieth year.

HAROLD SLADE, aged 48, died October 2, 1908, in Tokyo, Japan. Dr. Slade was born in San Francisco, Cal., in 1860.

FREDERICK A. SWEETLAND, aged 81, said to be the oldest practising dentist in the United States, died in Wyoming, Ill., October 28, 1908.

WILLIAM G. GILL, a dentist of Brooklyn, N. Y., died at his home from the effects of an operation. He was in his sixty-seventh year.

ARTHUR C. MATTHEWS, a dentist, aged 41, died suddenly at his home in Harlem, January 4, 1909.

AARON H. PARKER, of Boston, Mass., died January 1, 1909. Dr. Parker was 72 years of age and had practised dentistry in Boston for the past 30 years.

### DEATH OF THE FIRST WOMAN DENTIST IN THE UNITED STATES.\*

Mrs. Dieffenbach Truchsess—said to be the first woman in the United States to practise dentistry—died December 15th at Bellevue Hospital, where she had been transferred from Roosevelt Hospital. She was suffering from pneumonia and other diseases. Mrs. Truchsess was seventy-eight years of age, and first practised in Philadelphia. She told Dr. Powers, under whose care she was while a patient, that she had practised dentistry for many years in Washington, D. C., and formerly had many patients in that city. The husband of Mrs. Truchsess, now dead, was a dentist and a pioneer manufacturer of artificial teeth."

\* By courtesy of L. R. Pond, D.D.S., New York.

**DIXON DENTIST DIES.**—Dr. F. F. Upham, who was one of the pioneer residents of Dixon, having practised dentistry there for about forty years, died December 22d, after a short illness. At the time of his death the doctor was sixty-four years of age, and until a short time before his illness had not had a sick day in his long residence in Dixon. Stomach trouble and heart failure were the primary causes of his demise. Dr. Upham leaves a wife, one son and three daughters.

## Marriage Notes

ON Christmas eve, at 8:30 o'clock, a beautiful wedding was celebrated at the home of D. L. Stevenson on the north side of Chicago, when his grand-daughter, Miss Mabel Lancaster, of Nevada, Mo., and Dr. Charles Edward Waterman, of Chicago, were united in marriage.

ROY R. BODE of Marietta, a dental student, and Miss Georgia Calhoun, daughter of Mr. and Mrs. James C. Calhoun of East Liverpool, Ohio, were married recently at Holy Name church, Rev. Father William McDermott officiating. The bride is a graduate of East Liverpool high school and has been attending the Capitol College of Oratory and Music.

DR. THOMAS E. SHUFORD of Memphis, Tenn., a graduate of Northwestern University Dental School, was married December 31st to Miss Marie Davidson of 5808 South Park avenue, Chicago, Ill. The wedding was a quiet family affair. Rev. Martin W. Buck officiated. Dr. and Mrs. Shuford will make their home at Memphis.

DR. ANDREW MONROE, a young dentist of Bowling Green, Mo., and formerly of Bellflower, and Miss Kate Blades, sister of County Collector, L. E. Blades, of this city were married recently at the home of the bride's parents in Mineola, by Rev. Copher, of Moberly, Mo.

## Correspondence

The following letter (*unsigned*) has been received by us with the request that it should be published together with the inclosure.—EDITOR.

### TO THE EDITOR:

Gentlemen:—Enclosed find an order just issued by the War Department, which should be brought to the attention of the profession at large, especially if the Dental Corps of the Army is to remain a useful branch of the service. Unless the Regulation is changed there is no doubt that the Dental Corps will be, except in emergency cases, almost ignored by the enlisted men within a few months. Enlisted men will not go to a dentist who is authorized to do only certain kinds of work, and who can use only certain kinds of materials, any more than they would in civil life go to a physician who was allowed to use only two different kinds of medicine. The success of this corps depends upon the confidence of the enlisted men, and nothing could more completely have aroused resentment and refusal to receive treatment than the limitations recently placed upon the dental surgeon and the treatment that enlisted men may receive. Compulsory treatment has been suggested and in fact put into execution at many posts, but with the limitations as to materials it would certainly be an outrage, and reflect upon the profession, for the men are constantly changing into civil life, and the majority have never had dental work or service before, and as they are educated along dental lines by the corps and receive impressions upon dental service, so will it react upon the civilian practitioner, and he will be judged accordingly. The soldiers are just as desirous of having the proper materials used in every case as are officers, and certainly no one will say that a man can be blamed for refusing to have his front teeth filled with cement or amalgam.

This order will work untold hardships on the men stationed in the Philippines,

Cuba and Alaska, where civilian dentists are few, and their prices beyond the reach of the enlisted men. In the Philippines, outside of Manila, there are no dentists, so that men going on foreign service for two years, with a dentist visiting a post every four to six months means the wholesale loss of front teeth.

Under the provisions of this order, crown or bridgework cannot be done, consequently many teeth that can be saved and made useful will have to be extracted. Where a soldier has lost some of his molars (which is the case with over one-half of the enlisted men), recourse to extraction is malpractice that in civil life would be almost criminal.

In closing, I would like to state that the dental surgeons, most of whom have industriously endeavored to maintain a status that would reflect credit on their corps and the profession at large, feel that regulations like the enclosed one are a reflection on their decency and self-respect, and a reflection on the profession at large as scientific men. \* \* \*

1418. Dental surgeons will operate between the hours of 9 a.m. and 4 p.m. upon those officers and enlisted men who are entitled to their services. They may operate upon others, not entitled to free service, before and after these hours, when their services are not required by those entitled to them, but material issued to them by the Government will be used only in operations upon officers and enlisted men of the Army. Emergency work, whether for officers or enlisted men, shall at all times have precedence over the work for those not entitled to free service, without regard to the hours of duty. [1379686, A. G. O.]

1420. For plate work or for the filling of teeth of enlisted men the materials supplied by the Government will be used and no other, and dental surgeons are forbidden to enter into any financial agreement with enlisted men involving an obligation for payment for silver, platinum, or gold used for filling cavities in teeth, for the construction of bridgework, for the fitting of crowns, the making of artificial dentures, or other dental work. [1379686, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

J. FRANKLIN BELL,

*Major General, Chief of Staff.*

OFFICIAL:

HENRY P. MCCAIN,  
*Adjutant General.*

## Patents

### PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED

- 904601. Artificial tooth, F. D. Case, Kansas City, Mo.
- 904990. Dental broach and holder, C. R. Powers, Princeton, Wis.
- 905535. Dental appliance, E. E. Holmes, Indianapolis, Ind.
- 905447. Attachment for barbers' chairs and the like, J. Mentz, Islip, N. Y.
- 905369. Disinfector for dentists' cuspidors, H. P. Roberts, Boston, Mass.
- 905479. Hinge for dental articulators, R. Sykora, Boston, Mass.
- 906214. Machine for boxing toothpicks, C. C. Freeman, Dixfield, Maine.
- 905886. Tooth-brush, J. H. Kinney, Rockaway, N. J.
- 907003. Dental instrument, R. T. Burnley, Atlanta, Ga.
- 906869. Dental tool-holder, C. B. Gehringer, Philadelphia, Pa.
- 906911. Tooth crown or plate and swaging device, P. B. McCullough, Philadelphia, Pa.
- 906977. Suction device for dental plates, G. S. Whittaker, Gloversville, N. Y.
- 907326. Artificial tooth, L. E. Evslin, Peoria, Ill.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

## Notices

### NEW HAVEN DENTAL ASSOCIATION

ON Tuesday evening, December 15, 1908, the annual banquet of the New Haven Dental Association was held at the Union League, and the following officers were elected for the coming year: President, Dr. George C. Fahy; Vice-president, Dr. F. G. Baldwin; Secretary, Dr. E. L. Richards; Treasurer, Dr. Jewell M. Gompertz.

### COLORADO COLLEGE OF DENTAL SURGERY

THE annual midwinter clinic of the Alumni Association of the Colorado College of Dental Surgery and the Denver Dental Association will be held at the College building February 11th, 12th and 13th. All ethical dentists are invited to attend and take part. For particulars address A. W. Starbuck, Colorado College of Dental Surgery, 14th and Arapahoe Streets, Denver, Colo.

### ALUMNI ASSOCIATION, MARQUETTE UNIVERSITY

ON January 19 and 20, 1909, the Alumni Association, Dental Department, Marquette University, will hold their Third Annual Clinic, Dealers' and Manufacturers' Exhibit, at the Marquette Auditorium.

The Clinic Committee have arranged an excellent program. The Operative Clinics will be on their usual high order and the Table Clinics will be the most interesting and instructive which we are able to obtain.

A cordial invitation is extended to the general profession to be present, as well as all members of the Alumni Association and all graduates of the University.

WILLIAM KETTLER,  
*Secretary.*

### MINNESOTA STATE BOARD OF DENTAL EXAMINERS

THE next regular meeting of the board for the examination of applicants for license to practise dentistry in Minnesota, will be held at the dental department of the State University in Minneapolis beginning on March 9, 1909, at 9 a.m.

All applications must be in the hands of the Secretary by March 1, 1909. For further information address the Secretary,

DR. GEO. S. TODD,  
*Secretary,*  
Lake City, Minn.

### NEW JERSEY STATE BOARD OF REGISTRATION AND EXAMINATION IN DENTISTRY

THE New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination beginning Tuesday, July 6th, and continue through the 7th and 8th, in the Assembly Chamber of the State House at Trenton, N. J. Practical examination on the 6th, and theoretical examination 7th and 8th. Sessions begin promptly at 8 a.m. each day. Candidates requested to bring their patients.

Practical work consists of one gold filling and one amalgam. Gold filling must be approximal with an approximating tooth in position, and soldering of plate. A photograph and preliminary credentials must accompany the application.

Application to be in the hands of the Secretary ten days prior to the examination.

CHARLES A. MEEKER, D.D.S.,  
*Secretary of Dental Commission,*  
29 Fulton Street, Newark, N. J.

## WEST VIRGINIA STATE DENTAL SOCIETY

THE West Virginia State Dental Society held their annual meeting at Fairmont, W. Va., October 14, 15 and 16, 1908.

Dr. H. H. Harrison, the president, was ill at his home so the First Vice-President, Dr. Chas. H. Bartlett occupied the chair. Dr. Harrison's address was read by the Secretary and Dr. Bartlett on taking the chair, delivered an able paper. The first morning's session was taken up with roll-call, payment of dues, discussion of needed legislation and appointment of committees. At the afternoon session, Dr. Geo. H. Wilson of Cleveland, Ohio, read a paper (illustrated by lantern) on the "Anatomical Articulation of Teeth." Also a talk (illustrated by charts) on "Clasps, their proper and improper Use and Arrangement," followed by a general discussion of the subject. In the evening Dr. H. L. Ambler of Cleveland, Ohio, gave a very interesting talk of "Travels in the Orient," also illustrated by lantern slides.

Thursday the 15th, was entirely devoted to Clinics by the following: Dr. E. R. Kibler, Indianapolis, Ind., Porcelain Inlay, Chair Clinic; Dr. J. A. Libbey, Pittsburg, Pa., Immediate Root Canal Filling, Chair Clinic; Dr. A. C. Plant, Wheeling, W. Va., Ascher's Artificial Enamel Filling, Chair Clinic; Dr. H. H. Meyers, Pittsburg, Pa., Preparation of Cavities for Gold and Porcelain Inlays (with models), Table Clinic; Dr. J. A. Libbey, Pittsburg, Pa., Annealing Swiss Broaches, Table Clinic; Dr. F. L. Wright, Wheeling, W. Va., Cast Gold Inlay, Chair Clinic; Dr. Geo. H. Wilson, Cleveland, Ohio, Cast Aluminum Plate, Table Clinic. Also, Models for Anatomical Articulation of Teeth; Models for Clasps, Table Clinic; Dr. A. Earl Hennen, Wheeling, W. Va., Cast Gold Inlay, Chair Clinic.

At 7 o'clock the Fairmont Dentists gave a banquet to the Society.

Dr. John W. Storer of Wheeling, W. Va., was toast-master. Mr. Lee S. Smith of Pittsburg, Pa., gave a highly entertaining talk on his "Travels around the World."

Friday morning was taken up with unfinished Clinics, discussions and election of officers as follows: President, Dr. Jas. E. Dowden, Fairmont, W. Va.; First Vice-President, Dr. John H. McClure, Wheeling, W. Va.; Second Vice-President, Dr. L. J. Walker, Grafton, W. Va.; Secretary, Dr. F. L. Wright, Wheeling, W. Va.; Treasurer, Dr. D. C. Clark, Blacksville, W. Va.

Wheeling was chosen as the next place of meeting. The time is October 13, 14 and 15, 1909.

F. L. WRIGHT,  
*Secretary.*

## THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS

THE twenty-seventh annual meeting of the National Association of Dental Examiners will be held at the Hotel Chamberlain, Old Point Comfort, Va., first session opening at 10 o'clock a.m., Monday, August 2d, 1909, and continuing the 3d and 4th.

The result of the mail vote by the committee to ascertain the consensus of opinion as to place and date from October 19th to the present date was ninety-one votes for Old Point Comfort the first three days of August, thirteen for Birmingham in March, seven for Birmingham in July. The president has therefore selected Old Point Comfort.

The rates will be, American plan, \$3.00 per day, without bath; \$4.00 per day, with bath. Large and commodious meeting rooms will be furnished free. Railroad and steamship rates will be furnished at a later date.

CHARLES A. MEEKER, D.D.S.,  
*Secretary.*

## NATIONAL ASSOCIATION OF DENTAL FACULTIES

The National Association of Dental Faculties will hold their annual meeting in connection with the National Association of Dental Examiners in the Hotel Chamberlain, Old Point Comfort, Va., August 2d, 3rd, and 4th, 1909, commencing at 10 a.m.

Hotel rates the same as the National Association of Dental Examiners. Railroad and Steamship rates given at a later date.

B. HOLLY SMITH, D.D.S.,  
*Chairman of the N.A.D.F.*

## Memorandum

## CONCERNING THE EMPLOYMENT OF DENTAL SURGEONS IN THE UNITED STATES ARMY

## LAW AUTHORIZING EMPLOYMENT

The act of Congress approved February 2d, 1901, authorizing the employment of dental surgeons in the Army is as follows:

That the Surgeon General of the Army, with the approval of the Secretary of War be, and he is hereby, authorized to employ dental surgeons to serve the officers and enlisted men of the Regular and Volunteer Army, in proportion of not to exceed one for every one thousand of said Army, and not exceeding thirty in all. Said dental surgeons shall be employed as contract dental surgeons under the terms and conditions applicable to Army contract surgeons, and shall be graduates of standard medical or dental colleges, trained in the several branches of dentistry, of good moral and professional character, and shall pass a satisfactory professional examination.

## AGE AND APPLICATIONS

Candidates for employment as dental surgeons must be not less than twenty-four nor more than thirty years of age. Application should be made to the Surgeon General of the Army—for which purpose blanks will be furnished—and must be accompanied by testimonials from well-known professional men as to the character and qualifications of the applicant.

## SELECTION OF CANDIDATES

The position of dental surgeon is not open to competitive examination for all who may choose to apply; selections will be made by the Surgeon General of the Army from among the applicants, and invitations to appear for examination will be sent to those selected.

## EXAMINATIONS

Candidates for employment as dental surgeons will be required to pass a rigid physical examination, equivalent to that required of candidates for commission in the Army, and those failing to possess the required physical qualifications will not be permitted to enter upon the professional examination. The professional examination will be thorough and embrace both theoretical knowledge and practical operative and prosthetic dentistry, particular stress being laid upon the clinical examination in practical work. The examination embraces the following subjects:

## THEORETICAL (WRITTEN AND ORAL)

|             |   |
|-------------|---|
| Anatomy.    | Dental anatomy and physiology.          |
| Physiology. | Dental materia medica and therapeutics. |
| Histology.  | Dental pathology and bacteriology.      |
| Physics.    | Orthodontia.                            |
| Chemistry.  | Oral surgery.                           |
| Metallurgy. | Operative dentistry, theory.            |
|             | Prosthetic dentistry, theory.           |

## PRACTICAL (CLINICAL)

Operative dentistry.

Prosthetic dentistry.

An average of 75 per cent. will be required in each subject of the theoretical examination and 85 per cent. in the practical examination.

The time usually occupied in a complete examination is ten to twelve days.

No sample list of questions asked at any examination will be published.

As the entire number of dental surgeons provided for by law are now in service examinations will be authorized in future only when necessary to fill vacancies; selected candidates will when occasion requires be invited to present themselves to the examiner stationed nearest to their respective places of residence.

No allowance can be made for the expenses of persons undergoing examination, no public funds being available for such purpose.

## CONTRACT AND SALARY

Contracts will be made for a period of three years, but may be annulled at any time by the commanding general of a military department for sufficient cause, or by the Surgeon General when in his opinion the interests of the service require it.

Dental surgeons will be paid one hundred and fifty dollars per month; are entitled to traveling allowances in obeying their first orders, in changing stations, and in returning to their homes at termination of service; are allowed quarters in kind, but are not entitled to commutation of quarters; they have the privilege of purchase of supplies for their own use.

## RANK AND UNIFORM

Dental surgeons have no rank in the Army.

Their dress, service, and white uniforms will conform to those of medical officers, but without the shoulder straps, the letters "D. S.," in silver instead of gold, replacing the letters "U. S." on the collar of the coat.

## ASSIGNMENT, DUTIES, ETC.

Dental surgeons are not permanently assigned to any regiment or arm of the service; they are attached to the Medical Department and are assigned to duty upon the recommendation of the Surgeon General or of the chief surgeon of a military department. No choice of station can be accorded or promise made of assignment to any specified locality.

Suitable operating room will be assigned upon application to the commanding officer of a station, and all instruments, appliances, and materials necessary to the performance of duties will be supplied by the Government. Ordinarily one enlisted man of the Hospital Corps will be detailed to assist the dentist in his operations, in caring for public property and stores, and in performance of clerical work.

Dental surgeons will serve the officers and enlisted men of the Regular and Volunteer Army and contract surgeons only; families of officers and civilian employees are not entitled to free dental services. The hours of official duty will be from 9 a.m. to 4 p.m. daily, except in cases of emergency; during other hours they will be privileged to operate upon persons not entitled to free services, but Government material may be used only upon persons entitled to free treatment.

R. M. O'REILLY,

*Surgeon General, U. S. Army.*

April 6, 1905.

Approved:

ROBERT SHAW OLIVER,

*Assistant Secretary of War.*



## News Summary

Drake University, Des Moines, Ia., has absorbed the Keokuk Dental College and this school is now operating under the name of Drake University College of Dentistry, with Dr. W. H. De Ford as dean.

When a dentist in China is extracting a tooth for a patron an assistant pounds on a gong to drown the cries of the patient.

Dr. L. R. Van Sant, owner of Van Sant Building.—Dr. L. R. Van Sant, Peoria, Ill., one of that city's most progressive professional men, is now the sole owner of the Van Sant building, located at Chestnut and South Adams street. Through a deal he purchased the half interest held in the property by his brother, Ralph.

Dr. R. Fralick, of Bay City, will be associated with Dr. A. F. Monroe in his dental offices, and they will be ready to carry on the business as usual. Dr. Fralick is a graduate of the University of Michigan and was formerly associated with Dr. Slawson, of Bay City.

Regular Monthly Meeting of Association on Tuesday Evening.—New London County Dental Association will meet Tuesday evening, January 8th, in the office of Dr. J. Otis Miner at 48 Main street. It will be the regular January meeting of the county association.

Dr. Gilbert M. Griswold of Hartford will give a clinic on Insertions of Burnished Gold Filling. Dr. Griswold is recorder of the State Dental Commission.

Banquet and Lecture.—Dr. William Prothero, of the Chicago Dental College, gave an interesting lecture at the meeting of the Toledo Dental Society at the Secor last evening. About fifty dentists attended. Following the lecture there was a discussion led by Dr. George Wilson, of Cleveland. The lecture was illustrated with a stereopticon. The dentists enjoyed a banquet before the lecture.

Dr. F. B. Olwin Returns to Hammond.—Dr. F. B. Olwin, who has been on a farm in Robinson, Ill., for some time in an effort to regain his health, returned to Hammond, Ind., recently and says he feels like a new man again.

Annual Banquet of Dental Association.—Elaborate preparations are being made by a committee for the annual dinner of the Central Dentists' Association, which will be given in February in the assembly hall of the Jersey City Club, Clinton and Crescent avenues, Jersey City.

Dental Debate.—Preparations are being made for holding a joint meeting on January 14th at Monmouth, Ill., by the dental societies of Fulton, McDonough and Warren counties. A program will be given in the morning and in the afternoon.

Dentists Pass State Examination.—The State Board of Dentistry, Trenton, N. J., has announced that the following among others passed the examination held there recently: Frederick Collier, W. H. Magann, Philadelphia; Frank C. Tuttle, Camden; G. W. Wilkins, Freehold; S. Merrill, Trenton; F. C. Newman, Red Bank. Ten applicants failed to pass.

Vegetarian Takes Walk.—Dr. Alfred Owre, dean of the College of Dentistry of the University of Minnesota, who is walking from Chicago to Minneapolis to demonstrate the strength and stamina given by a vegetarian diet, arrived in Madison, Wis., in fine condition.

Death by Pistol Shot.—Dr. A. B. Pitts, one of the most prominent physicians of South Mississippi, was shot and instantly killed on the afternoon of December, 10, 1908, by Dr. T. B. Birdsong, a dentist. The tragedy occurred in Dr. Pitts' office in the Bass building, in which Dr. Birdsong also occupied an office.

**CHANGES AMONG DENTAL EXAMINERS.**—Dr. W. W. Evans, Washington, D. C., has resigned as a member of the Board of Dental Examiners and Dr. C. W. Cuthbertson has been appointed by the commissioners to fill the vacancy. In presenting his resignation, Dr. Evans explains that he has given up his practice in the district and removed to the State of Virginia.

Dr. J. V. CONZETT has been officially notified of his appointment as a member of the State Board of Dental Examiners, to succeed Dr. W. H. De Ford, of Des Moines. The appointment was made by Governor Garst and is a fitting recognition of Dr. Conzett's exceptional abilities.

**DENTIST SEIZED ON OCEAN LINER AS WOMAN SLAYER.**—Oscar Slater, a man with several aliases, once a dentist on Sixth avenue, New York City, but who has since had offices in London, Liverpool and Glasgow, was arrested on January 3rd, on the incoming liner "Lusitania" on the charge of having murdered a wealthy woman, eighty-two years old, in the Scottish city about ten days ago.

**AMERICAN HOSPITALS AND DENTISTRY.**—Hospitals in this country pay too little attention to the teeth, says Dr. John W. Brannan, president of the board of directors of Bellevue Hospital, New York City, in suggesting a free dental department for the institution. It is Dr. Brannan's plan to provide free dental work for all who are unable to pay dentists' bills. He says English hospitals have paid more attention to the teeth than we have on this side.

**PRINCETON DENTISTS MAKE ROUNDS OF THE PUBLIC SCHOOLS.**—Dental inspection began in the Princeton schools December 10th, under the direction of Dr. J. W. Roper of Princeton, Ind., chairman of the Dental Association of Indiana. All of the dentists of Princeton are assisting on the inspection, each taking his turn.

The teeth of every child in the schools will be examined and a printed slip given to each to take home to his parents.

**PAINLESS DENTISTRY FOR DOGS.**—"Dentistry for dogs is now as highly developed as for humans," said a specialist in dogs' diseases. "The operator needs four, five or even six assistants, according to the size and energy of the patient, even after cocaine has been applied, and often we use gas if the patient proves to be too much for us. But with dogs, as with people, care must be taken that the heart is in good condition before the gas is administered."

**DENTISTS HONOR DR. LISCHER.**—During a special session of the Institute of Dental Pedagogics, at the Southern Hotel, St. Louis, Mo., January 1st, officers were elected as follows: President, Doctor Ellison Hillyer, Brooklyn, N. Y.; vice-president, Doctor John A. Bryan, Indianapolis, Ind.; secretary and treasurer, Doctor B. E. Lischer, St. Louis.

Doctor D. H. Squire, Buffalo, N. Y., was elected a member of the Executive Board, to serve three years. Doctor H. E. Friesell, Pittsburg, Pa., was chosen a member of the commission on text books for a term of three years.

The next meeting will be held at Toronto, Canada.

**RECEIPTS OF MEDICAL AND DENTAL BOARDS OF OMAHA, NEB.**—The board of dental examiners reports receipts for the past year of \$1,092.83, including \$53.83 on hand December 17, 1907. Out of this \$20 was paid as dues to the National Association of Dental Examiners, \$150 was paid for the expenses of Dr. Smith as a delegate to the convention of the National Association. Members were paid per diem allowances and expenses for attendance upon meetings of the board as follows: J. H. Wallace, \$126.04; C. F. Ladd, \$52.10; C. S. Parker, \$149.72; H. C. Brock, secretary, \$244.25, and W. T. Smith, \$121.30.

**EXTRA MEETING OF STATE DENTAL BOARD OF WHEELING, W. VA.**—A special meeting of the State Dental Board was held at Wheeling, W. Va., in order that four

young dentists might start the practise of their profession without having to wait until the next regular meeting of the board which will not be held until June. The examinations were conducted by three members of the board, Dr. J. W. Storer, of Wheeling; Dr. F. R. Stathers, of Clarksburg, and Dr. C. H. Bartlett, of Parkersburg.

**JEWISH DENTISTS ORGANIZE.**—A new organization, composed chiefly of Jewish dentists, has been formed in Philadelphia, Pa., and these officers were elected at a meeting held in the Hebrew Literature Society's rooms: President, Dr. C. L. Santz; Vice-President, Dr. David Feldman; Recording Secretary, Dr. S. S. Kishler; Corresponding Secretary, Dr. Richard Freides; Treasurer, Dr. A. Fisher; Trustees, Dr. Chalfin, Dr. Salzman, Dr. L. Englander, Dr. S. Englander and Dr. Halpern.

**LICENSE REVOKED.**—Dr. J. Homer Williams, the alleged fake dentist at 1007 Main street, Kansas City, Mo., whose license was revoked by the State Board of Dental Examiners for alleged fraudulent practice and whose business was such that he bought his teeth 1,000 sets at a time and his cement by the barrel, is taking a much needed vacation from active practice.

**NEW DENTIST LICENSED.**—Of the class of applicants for licenses, who recently took the examination before the State Board of Registration and Examination in Dentistry, in the Assembly chamber at Trenton, N. J., the following successfully passed and were granted licenses:

L. C. Mallory, Perth Amboy; Frederick Collier, Philadelphia; W. H. Magann, Philadelphia; E. H. Slocum, Paterson; Frank C. Tuttle, Camden; John F. Devoe, Elizabeth; Seburn Babcock, Paterson; Charles G. Stuber, Jersey City; G. W. Wilkins, Freehold; Herman Lehman, New York; B. Merrill, Trenton; Frederick C. Newman, Red Bank; Thomas E. Butler, Hackensack; Oscar Koenig, Jr., New York; W. F. Bottomley, Newark, and John Moss, New York. Ten of the applicants who took the examination were not successful.

**DENTAL STUDENTS OF PROVIDENCE, R. I., TAKE STATE EXAMINATIONS.**—The State Board of Registration for Dentist held a meeting at the State House yesterday and examined about sixteen candidates for certificates of practice. The names of the successful students will be announced later. The members of the examining board are Drs. Forrest G. Eddy, Harry L. Grant, James F. Gilbert, Walter Davis and Albert L. Midgeley.

**COMMERCIAL CLUB COMPLETES ARRANGEMENTS FOR MEETING IN MAY.**—The Commercial Club of Des Moines, Ia., has completed arrangements for the entertaining of the next annual meeting of the State Dental Society, which will be held there on May 4, 5 and 6, 1909. The last convention of the society was held there last May. This is a large convention and the attendance last May was in the neighborhood of five hundred.

**WICHITA DENTIST WANTS KANSAS TEACHERS TO TAKE UP ESPERANTO.**—Dr. R. Matthews, a dentist of Wichita, in talking with Kansas teachers about the new language, Esperanto, believes that this language ought to be taught in the public schools of the State. Dr. Matthews is an Esperanto enthusiast. He has studied it for two years and speaks and reads it as easily as he does English.

**CLEVELAND ALIENIST SAYS THAT DEFECTIVE TEETH PRODUCE NERVOUS DISORDERS.**—In trying to prove his theory that many nervous disorders and even insanity are caused in numerous instances by defective teeth, Dr. Henry Upson, a Cleveland neurologist, declares that he has produced marked beneficial effects on patients at the Newburg Insane Asylum by simple dental operations.

Arrangements have been made by which Dr. Upson will, during the coming week, make experiments on persons at the Cleveland workhouse. An X-ray machine is used to determine whether the teeth or their roots are defective. This test also shows any pressure of the roots on the various nerves leading from the mouth to

the brain. Dr. Upson bases his belief on the theory that insanity and crime are correlated.

**NEWLYWEDS' BABY.**—An interesting illustration of prenatal influence is narrated by an Ohio correspondent. A young married lady who expected the advent of an heir has followed with much interest the cartoons of the Newlyweds' Baby, which have appeared for some months in the illustrated Sunday papers. It is characteristic of the Newlyweds' baby that it has but one tooth, an upper left central. When this lady's heir arrived he had one tooth—an upper left lateral. It is regarded by our correspondent as a clear case of prenatal impressions.

**DENTAL PEDAGOGUES HOLD ANNUAL SESSION AT ST. LOUIS.**—Dental departments of thirty-eight colleges and universities in the United States and Canada were represented when the sixteenth annual meeting of the Institute of Dental Pedagogies began in St. Louis, Mo., December 30th. Dr. A. W. E. Wilmott, of the Royal College of Dentistry of Toronto, Canada, presided. E. B. Stubblefield, of Vanderbilt University, Nashville, Tenn., was one of the speakers.

**THE FIGHT AGAINST TUBERCULOSIS.**—Dr. R. H. Greer of Mansfield, Texas, prominent in the dental profession, will endeavor to interest the dentists of the State in the fight against tuberculosis. Dr. Greer is secretary of the Young Men's Democratic Clubs of Texas. The directors of the Texas Anti-Tuberculosis Association recently requested Dr. Greer to aid in the anti-tuberculosis movement. He will undertake this mission at an early date.

**DENTISTS MET AT AMSTERDAM.**—Several Gloversville and Johnstown members of the Fulton and Montgomery County Dental Club attended a meeting of the organization held last evening at Amsterdam, where the members were the guests of the members representing the Carpet city. Several members of the Schenectady County Dental Club were also the guests of the evening. "Anesthetics" was the subject of the discussion last evening, several of the members and visiting dentists taking part in the discussion. Refreshments were served.

**A CHARITY DENTAL CLINIC.**—The quarterly meeting of the Board of the Associated Charities, Reading, Pa., was held January 4th. Various new plans for enlarged activity were acted on. The society's endeavor in making possible the appointment of a probation officer with pay was reported as having been consummated. He will have his rooms at the Humane Society building.

The society has endorsed the project of certain citizens to establish a charity dental clinic and will co-operate. The increased work of the Associated Charities necessitates enlarged equipment; the plans are under consideration.

**HONOR HORACE WELLS.**—For the fourteenth time in as many years the Horace Wells Dental Association of Connecticut celebrated the anniversary of the discovery of anesthesia by a dinner in the Heublein Hotel, Hartford, and nineteen dentists and Mayor Edward W. Hooker sat down to a banquet in the rathskeller last evening, in honor of the sixty-fourth anniversary of that important event. Before the dinner a short business meeting was held and the following officers were elected for the ensuing year: President, Dr. Charles H. Riggs, of Hartford; Vice-President, Dr. C. F. Gibbs of Bridgeport; Secretary and Treasurer, Dr. Charles McManus.

Dr. W. V. Lyons of Bridgeport was elected a member of the society.

**REPORT ON CHILDREN'S TEETH.**—Still looking after the interests of the young, the London County Council is holding out a hand of welcome to young dentists, of whom so many come to this side from the United States, to whom it would seem London presents a fine field of operation. A subcommittee of the County Council, appointed to inquire into the medical treatment of children attending elementary schools, last night issued a report in which it states that the teeth of children

are in an extremely unsatisfactory state, and that this is due to the neglect of proper feeding in infancy and childhood.

The committee makes the remarkable statement that sufficient provision does not exist in London for constructive treatment or even the extraction of teeth. It has considered both a number of private practitioners and of dentists of the public hospitals and has come to the conclusion that the existing provision is wholly inadequate, and that unless additional facilities are provided it is not possible for children to have proper dental treatment.

**DEAN THOMPSON WANTS DISTRICT TO PROTECT CHILDREN.**—Children in the public schools of Washington may be compelled to have their teeth examined in the near future, if the plan to be submitted to the board of education by Dr. Henry C. Thompson, dean of the dental department of George Washington University, is accepted.

Dr. Thompson is of the opinion that a system of dental hygiene should be established in the public schools. Also he feels that the District government should establish a free clinic for the poor of the city, to be presided over by prominent physicians and dentists. He is also negotiating with George Washington University to establish a free ward in that institution, to be devoted exclusively to the treatment of mouth diseases. The university has the matter under consideration, and it is understood the plan has met with favorable consideration by the faculty, and that Dr. Thompson's plan will be adopted.

The suggestion of Dr. Henry C. Thompson, dean of the dental department of George Washington University, that a system of dental hygiene be established in the public schools of this city, meets with favorable consideration at the hands of school officials.

Superintendent of Schools Stuart believes that such a system would be beneficial to the children, and Capt. James F. Oyster, president of the board of education, likewise indorses the idea. Dr. Thompson will submit his plans in detail to the board at its next meeting, and it is probable that definite action will be taken by that body.

Speaking of the matter yesterday, Superintendent Stuart said: "There is not at all the medical inspection there should be in the schools. There are twelve inspectors now, who see the children two or three times a week. Of course, I would require that any inspectors provided by Dr. Thompson, and also his plans, should be approved by the health department. But the theory of the mouth and teeth inspection, without question, is good. We already have a course in hygiene in all of the grades, with text books above the third grade.

"In New York the inspection extends to an examination of the eyes and tests of them."

Capt. Oyster doubted its practicability under present conditions. He laid special stress on the requirement that all inspectors must be of undoubted ability, and not students.

**AN EASY WAY TO PACK A RUBBER PLATE SO THAT COLORED RUBBER WILL NOT SHOW THROUGH THE PINK.**—If you are to use two colors of rubber dissolve some of each color in chloroform using a separate bottle for each color. Have each solution about the consistency of thick cream. Heat the flask over a Bunsen flame until quite warm. With a small brush paint the plaster where you wish to use pink rubber, with a pink solution, and with the other solution where you wish to use the colored rubber. Pack pink rubber where you painted the pink solution and pack the other rubber where you desire. When you pack in the sheet rubber against the wall where you have painted the solution, it will adhere to the coating and stay exactly where you place it. By judicious use of this method, almost any design, however fantastic, may be vulcanized in colored rubbers.

**COMMISSIONERS OF HARTFORD, CONN., SAY THEY ARE EXAMINERS, RATHER THAN PROSECUTORS.**—The biennial report of the State dental commissioners for the term

ended September 30, 1908, has been issued. The commissioners say that under "the present law no one can begin the practice of dentistry in the State of Connecticut either independently, as an associate, or as an assistant, without having passed the examinations by the board, thereby establishing his qualification for the practice of dentistry, and receiving a license. We fully believe this is a long step in advance for the protection of the dental profession and general public against malpractice."

The commission believes "that the time is at hand when practising dentists from other States, presenting proper credentials duly signed and sworn to by their State examining board and officers of their State society can be admitted by practical and oral, or written examination at the discretion of and by the consent of all the members of the board." As things are now everybody must appear before the commission for examination.

As to prosecutions the report says: "The board of dental commissioners would repeat and emphatically state that they are chiefly an examining board, but that when violations of the law are brought to their knowledge they will place such information as given in the hands of the county health officer whose duty it is to bring prosecution, and will do all in their power to obtain just conviction. It is the privilege and duty of every dentist in the State to report violations of the law to the dental commissioners or to the county health officers."

The report has a list of registered dentists and other miscellaneous information.

**WARRANT ISSUED FOR PROMINENT DENTIST.**—A warrant has been issued by local authorities for Dr. Webb, the prominent Towner dentist, charging him with obtaining money under false pretenses from Dr. Romig of Starkweather, who is attending to the practice of Dr. Browlee during his absence from the city. The check was for forty dollars and was given by Dr. Webb in return for forty dollars in cash, which he had obtained in two amounts of fifteen and twenty-five dollars from Dr. Romig. The check was given on the day before Christmas and since that time nothing has been heard of Dr. Webb, friends and relatives as well as the officials of Towner being unable to locate the missing man.

Dr. Webb has always borne a good reputation during the years of his practice in Towner.

**LIGHT AND PAIN.**—"Light is good for toothache," said the doctor. "Darkness is bad for it. If you are a toothache sufferer, haven't you often noticed how the pain in your jaw increases when, late at night, you turn off the lamp and try to sleep? Light, you see, is good for the toothache. There are a number of diseases it is good for—asthma, cold in the head, earache. These diseases in the dark all grow worse.

"Darkness is good for a sick headache and for neuralgia and for nausea. Haven't you noticed it? Light and darkness—they are remedies recognized at last; and to-day we prescribe them the same as we do quinine or nux."

**DR. COLTON DECLARES TUBERCULOSIS GERMS LURK IN DISEASED MOUTHS.**—In a lecture delivered by Dr. James C. Colton of Providence, R. I., to the Woonsocket Council, Knights of Columbus, the speaker advocated the introduction into the public schools of a system of educating the children in oral hygiene as a means of suppressing tuberculosis. Dr. Colton told of the vast number of disease germs which enter the body through the mouth, and emphasized the need of keeping the mouth and teeth clean.

He said that if an examination should be made of the mouths of all the school children, abnormal conditions would be found in at least ninety-five per cent. of them. Basing his belief on the conditions found in other countries, where dental education is given in the schools, the speaker said that such a system here would not only prove advantageous, but should be compulsory.

In Germany, the speaker said, eighty per cent. of the children in the industrial



schools were found to have diseased teeth. In England seventy-five per cent. were found to be suffering in that way.

The speaker said that in New York 18,000 school children were found by the Society for the Improvement of the Condition of the Poor to be suffering from oral disorders.

**MERGING OF T. O. TRACY CO.**—T. O. Tracy & Co., who have conducted a successful and growing dental supply business in the Gilbert block, Grand Rapids, Mich., for several years, have merged with the Ransom & Randolph Company of Toledo. Mr. Tracy becomes vice-president of the company and already has gone to Toledo to make his office at headquarters. The local office will be maintained and R. E. Munn has been sent here from Toledo to take charge.

**DENTISTS DISCUSS INSPECTION IN PUBLIC SCHOOLS.**—Dental inspection in the public schools was discussed in the meeting of the Valley district of the Massachusetts Dental Society last evening in Cooley's hotel and a committee was appointed to report on the subject in the next meeting. The committee consists of Drs. Cornelius H. Mack, A. J. Flanagan, H. E. Hosley, D. H. Allis and H. C. Ray. The discussion followed dinner, which was served in a private diningroom, Dr. J. Frank Tracy acting as chairman. Dr. H. P. Barber of this city and Drs. Eugene S. Taft, Jr., and Hector M. MacDonald of Greenfield were added to the membership. The matter of exempting dental practitioners from jury service was discussed and will be taken up with the State society. Dr. James P. Lockhart spoke on his impressions in China during two years of practice there, and Dr. J. T. Sheehan spoke of his impressions in Germany. Dr. W. F. Andrews demonstrated the Ideal casting machine. Members present were: Drs. Tracy, Mack, Andrews, Flanagan, D. C. Shaw, Ray, Phillips, Allen, Sheehan, Morgan, Clarke, Cunningham, Ehni and Hosley of Springfield, Maxfield and Bartlett of Holyoke, Barrett of Ware, Doane of Northampton, Preston of South Hadley, Desoe and Smith of West Springfield.

**APPLICANTS FOR DENTAL LICENSES ARE EXAMINED.**—The State Board of Dental Examiners of Boise, Idaho, completed December 30th a three days' session of examining applicants for licenses to practise dentistry in the Gem State. The members of the board in attendance at the meeting were C. E. M. Loux of Pocatello, Dr. Burns of Payette and Dr. Burns of Boise. Seven applicants were examined by the board in the various subjects and given practical work at the penitentiary.

Those successfully passing the examination were: Carrie L. Berthamm, graduate of University of Denver, in 1900; Edgar B. Carpenter, graduate of Ohio Medical University in 1905; Burt A. Loveless, graduate of Philadelphia Dental College in 1893; F. J. McLin of Farrington, Wyo.; James D. C. Grey, graduate of North Pacific Dental College in 1905. The board adjourned to meet during the latter part of June, 1909.

**TO PROMOTE SOCIAL INTERCOURSE AMONG MEMBERS.**—Certificate of Incorporation of the Empire State Dental Society has been filed at the office of the County Clerk, Binghamton, N. Y. The object of the society is to promote social intercourse and friendly feeling among the members of the corporation, to raise the profession of dentistry to the highest possible standard, and to promote the interests of the members. There are five directors, all of this city, C. S. Decker, Frank E. Taft, Hugh G. Pullen, Harry C. Webb and Myles J. Evans. The membership and activities of the society are confined to New York State.

**WILL PROVIDE DENTAL LAVATORIES IN ITS CARS.**—According to a letter received by the State Health Department, Austin, Texas, from Dr. Thomas R. Crowder of Chicago, superintendent of sanitation of the Pullman company, that company has decided to install a dental lavatory, a device to be used on the sleeping cars of the company providing a place for patrons to wash their teeth. This device is to be installed not only in Texas, but on the sleepers of the company throughout the United States.



DR. RICHARD GRADY of Annapolis, Md., writes to the Baltimore *Sun* on the subject of the "Proper Care of the Teeth": "For the cure of unhealthy conditions resulting in a predisposition to decay of the teeth and disease of the gums," he says, "a systematic as well as a local treatment is often necessary. That usually the treatment found most effective is that which promotes the general health of the patient, and includes nutritious food, sunshine, exercise and sleep." . . . From a systematic examination of the teeth of children at home and abroad it is known that from ninety-two to ninety-five per cent. have defective teeth. Over one-half of the enlisted men in the army have lost their molar teeth; and Surgeon-General Rixey, U. S. N., in his last report, says, respecting oral hygiene in the Navy: "In this problem the service is unfortunately dealing with the legacy of neglectful or unenlightened parents, both in the form of deteriorated teeth and untutored habits, and the task of accomplishing the necessary reform is therefore the harder and must be undertaken with energy. The solution of the problem and the realization of a better state of affairs in this direction hinges on a change of ideas which can only be effected by a thorough schooling."

RESOLUTIONS ADOPTED BY THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.—To the members of the Pennsylvania Association of Dental Surgeons: Your committee appointed to examine into the merit of the suit brought by Dr. Taggart against Dr. Boynton, of Washington, report as follows: Inasmuch as Dr. Taggart's patent is held to cover the process of making the wax model of cast inlay fillings, and as such process patents are generally considered, not only unprofessional, but also a serious hindrance to professional progress, your committee urge the members of the Association and the profession at large to support Dr. Boynton morally and financially. An incentive to a determined defense is the hope that it may lead to all processes for relieving human suffering being by legislative action declared unpatentable. Your committee further recommend that this report be published as the sentiment of the Association.

J. HOWARD GASKILL,  
J. G. LANE,  
WILLIAM H. TRUEMAN.

Adopted by the Association, December 8, 1908.

DIVISION OF DENTAL FEES.—The dental secretaries of the State Board of Health, Lincoln, Neb., have filed a report of fees for the past year. The dental secretaries examine applicants for certificates to practise dentistry in this State. They are: J. H. Wallace of Omaha, president; C. S. Parker of Norfolk, vice-president and treasurer; H. C. Brock of North Platte, secretary; C. F. Ladd of Lincoln. This board of secretaries paid dues to the National Dental Association from the fees it received and paid \$150 to defray the expenses of a delegate to the meeting of the National Association. The secretaries received \$1,092.83, including a balance of \$53.83 on hand December 17, 1907. They paid a total of \$901.10 to themselves and for expenses, leaving a balance of \$191.61 on hand.

DENTISTS DEMAND PATIENT'S BIRTH CERTIFICATE, ETC.—The dental students at Champaign, Ill., are taught to ask your occupation, the age of your father at his death and what grade of tobacco you use in your cornob before they will pull your aching molars. And these are only a few of the things you must divulge, according to Dr. Frederick B. Moorehead of the University of Illinois, in his address before the Institution of Dental Pedagogues.

Dr. Moorehead's address on "Oral Surgery" at the opening session of the three-day meeting, was devoted to advocating general surgery in the curriculum of dental students in universities.

To illustrate the system in vogue at Illinois, Dr. Moorehead read extracts from a printed case "history," prepared by one of his students. It read something like this.

Dentist (to applicant with damaged dining furniture). "What is your name, sir?"

Patient. "Patrick Mulcahey, an' my toot is n——"

"Tut, tut! What is your age, and where were you born?"—"Born in Ireland, av course, and goin' on fifty-three years, I wan——"

"Never mind what you want, what was your occupation in Ireland, and what is it since you came to America?"—"Raisin' potatoes in Ireland, and since I coom over I've been drivin' a wather wagon."

"Do you smoke?"—"Sure, I've always got some fire in th' flue."

"Do you smoke cigarettes, cigar or pipe; state what kind, if a pipe?"—"Sure, I used t' shmoke a clay until I fell off th' wather wagon wan day and lost me two front teeth; now I shmoke a cob. Say, ain't you a dentist?"

"How much a package do you pay for tobacco?"—"Fi' cents, av coorse; d'ye suppose I buy Turkish cigyrets?"

"One more question: Did your father and mother die of old age, and is your mother-in-law living?"—"Sure, me parents both lived to near a hundred, an' me mother-in-law still lives, and' I have a bad toot in the bargain. Will ye pull it or will ye not?"

#### MORE OF THE "HISTORY"

Dr. Moorehead did not read the "history" clear through. He explained that he had intended to bring a dozen along with him, but forgot them, and the one he had with him was thrust into his hands as he boarded the train at Champaign.

What would be the fate of John D. if he developed a toothache in Champaign and could not remember what he paid for his "Duke's Durham," the eminent dental preceptor of Illinois University did not state.

Dr. Moorehead explained that the "history" was merely an illustration of the form in use at the university at Champaign; his address was a feature of the opening session, and Dr. Virgil Loeb of St. Louis University, and others who discussed it at the session, approved the adoption of general surgery as a part of dental studies.

# Listerine Tooth Powder

Tooth powders have long been empirically employed, chiefly as a mechanical agent for cleansing the teeth, and with little regard to their composition or chemical action. Many of the articles sold for this purpose contain ingredients prone to fermentative action in the mouth, such as orris root, starch, sugar, etc., and in addition, pumice stone, cuttlefish bone, or other harmfully abrasive substances.

Listerine Tooth Powder, possessing neither of these objectionable qualities, very acceptably meets all the requirements of a frictionary dentifrice, and promises to give much satisfaction to those who employ it, in conjunction with a mouth-wash of Listerine, suitably diluted.

To dental practitioners of record, the manufacturers will be pleased to send a supply of samples of Listerine Tooth Powder for distribution to patients.

**Lambert Pharmacal Co.**  
**Saint Louis**

## CONTENTS FOR FEBRUARY, 1909

| CONTRIBUTED ARTICLES  | PAGE |
|---|------|
| How to Fill Teeth with Gold, . . . . . J. V. CONZETT, D.D.S.        | 111  |
| The Bite as a Guide in Tooth Selection, . . . . G. W. CLAPP, D.D.S. | 118  |
| The Expansion of Plaster, . . . . . STEWART J. SPENCE, D.D.S.       | 124  |
| Needed Changes in the Make of Teeth, . . . . L. P. HASKELL, D.D.S.  | 126  |

### BUSINESS BUILDING

Salesmanship in Dentistry, 127; The Secretary's Opportunities, 130.

|                                  |     |
|----------------------------------|-----|
| BROTHER BILL'S TRAVELS . . . . . | 133 |
|----------------------------------|-----|

### PRACTICAL HINTS

A Short Accurate Method of Making a Bridge Bite, 137; Preparation of the Mouth, Impression and Model for the Seating of Base Plates, 138; A Forlorn Hope Filling, 139; Sterilization of Forceps, 141; To Sterilize Stones, 141; Repair of Broken Model, 141; To Obtain Duplicates of Plaster Models, 141; A Cheap and Handy Asbestos Block, 141.

### DIGESTS, DENTAL

The Surgical and Therapeutic Aspect of Maxillary Readjustment, with Special Reference to Nasal Stenosis, Hare-lip, Cleft Palate, and Speech, 142; Professional Publicity, 146; Philanthropy, Publicity, Prophylaxy, 151; The Oral Manifestations of Syphilis, 153.

### DIGESTS OF ARTICLES WE OUGHT ALL TO KNOW ABOUT

Growing Old a Habit, 160; The Modern Moloch, 167; Diphtheria "Carriers," 178; Alcohol and the Individual, 180; The Rat and His Board Bill, 189.

EDITORIALS—Publicity or Education, 195; Don't Use Chloroform, 196.

### BOOK REVIEWS

The Application of Business Principles to Dentistry, 198; Marriage Notes, 199; Obituaries, 199; Patents, 199; Notices, 200; State Board Information, 203.

INDEX OF ADVERTISERS, page 40 of advertising section.

# Deliver The Goods

By NIXON WATERMAN



HE world will buy largely of anyone who  
Will deliver the goods;  
It is ready and eager to barter if you  
Can deliver the goods.  
But don't take its order and make out  
the bill  
Unless you are sure you are able to fill  
Your contract, because it won't pay you  
until  
You deliver the goods.

And rude or refined be your wares, still be sure  
To deliver the goods;  
Though a king or a clown, still remember that you're  
To deliver the goods.  
If you find you are called to the pulpit to preach,  
To the playhouse to play, to the forum to teach,  
Be you poet or porter, remember that each  
Must deliver the goods.

The world rears its loftiest shafts to the men  
Who deliver the goods;  
With plow, lever, brush, hammer, sword, or with pen,  
They deliver the goods.  
And while we their eloquent epitaphs scan,  
That say, in the world's work, they stood in the van,  
We know that the meaning is, "Here lies a man  
Who delivered the goods."